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ABSTRACT

The purpose of this dissertation was to develop an environmental education master plan for implementing environmental education programs into the schools of Montana. The process used to develop the plan consisted of the following steps: (1) to examine environmental education plans from other states; (2) to determine what Montana educators felt should be included in an environmental education plan; (3) to conduct interviews with Montana residents currently involved in environmental education programs; (4) to formulate tentative goals and present these to the Ad Hoc Environmental Education Steering Committee; and (5) to conduct two public hearings to allow those receiving the questionnaires the opportunity to react to the proposed goals. Seven goals were proposed, among them were establishment of an environmental education coordinating committee, developing and implementing pre- and in-service environmental education programs for all teachers, and requiring all schools to establish outdoor laboratories. Procedures for the implementation of the goals and priorities for implementation are considered. (TK)

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AN ENVIRONMENTAL EDUCATION PLAN FOR MONTANA

By

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Presented in partial fulfillment of the requirements for the degree of

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The purpose of this study was to develop an environmental education master plan for implementing environmental education programs into the schools of Montana.

The process that was used to develop the plan consisted of five distinct steps. The first step was to examine environmental education plans from other states to determine which aspect of them might be applicable to an environmental education plan for Montana. The use of an opinionaire to determine what Montana educators interested in environmental education felt should be included in the state plan was the second step. The third step was to conduct interviews with people in Montana who are highly active in environmental education programs. Tentative goals were then formulated and taken to the Ad Hoc Environmental Education Steering Committee for their critique. This was the fourth step. The fifth step in the planning process was to conduct two public hearings to allow the people who received an opinionaire the opportunity to react to the proposed goals.

These steps resulted in the formulation of the following goals for environmental education in Montana:

1. Establishment of an environmental education coordinating committee.
2. Restructuring the existing curriculum for all students in all levels to insure that it includes environmental awareness and understandings in all subject areas.
3. Developing and implementing pre- and in-service environmental education programs for all teachers.
4. Establishing a minor in environmental education at all state supported teacher education institutions.
5. The employment by the Department of Public Instruction of a person with the primary responsibility for environmental education.
6. Requiring all new schools to establish outdoor laboratories.
7. Development in the population of a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms.

The study also discusses procedures for the implementation of the goals. This discussion includes listing priorities for implementation.

'WHEN YOU STEAL FROM ONE PERSON,
IT'S PLAGIARISM.

WHEN YOU STEAL FROM TEN,
IT'S SCHOLARSHIP.

WHEN YOU STEAL FROM A HUNDRED,
IT'S ORIGINAL RESEARCH.'

Pete Seeger, The Incomplete Folksinger (New York, Simon and Schuster, 1972), p. 555.

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Chapter 1

INTRODUCTION

The purpose of this study was to develop a master plan for implementing any environmental education program in the schools of Montana. In writing this plan an attempt was made to answer the questions that B. Ray Horn has stated should be answered by any master plan for environmental education. These questions are:

1. What is important to us?
2. Where do we want to go?
3. How shall we get there?
4. How shall we know when we have arrived at our destination, at our goals?[1]

PROCEDURE AND METHODOLOGY

The process that was used to develop the plan found herein consisted of five distinct steps. The first step was that of reviewing environmental education plans from other states to determine their strong and weak points. This was done by comparing and contrasting similar goals found in each plan. The plans were also examined to determine which, if any, points in them might be applicable to an environmental education plan for Montana. The complete discussion

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[1]B. Ray Horn, "Perspectives for Developing a State Master Plan," The Journal of Environmental Education, 3, No. 2 (Winter, 1971), 20-22.

of other state's plans for environmental education is found in Chapter 2.

The second step was to determine what those Montana educators who have exhibited at least passing interest in environmental education believe should be tne goals of the Montana environmental education plan. This was accomplished through the use of an opinionaire. This opinionaire was sent to all persons who attended a statewide environmental education conference in May of 1973. The results of the opinionaire are reported in Chapter 3 and discussed in Chapter 4.

In addition to using an opinionaire, interviews with people in Montana who are highly active in environmental education were conducted. The interviews provided selected people the opportunity to discuss diverse topics relating to environmental education in more detail than could be done on the opinionaire. The results of the interviews are included with the interpretation of the opinionaire results in Chapter 4. A summary of each interview is found in Appendix F. This was the third step of the planning process.

The interpretation of the opinionaire and interviews lead to the formulation of a set of goals to be included within an environmental education plan for Montana. These goals, and recommendations for implementing them are found in Chapter 5. In an attempt to confirm the goals and suggested methods of implementation the persons who

attended the state environmental education conference were invited to one of two regional meetings, or hearings, where they could react to the proposed goals and proposed steps for implementation. Since no objection to the goals or implementation procedure was raised at either of the hearings, this, the fourth step, essentially completed the planning process.

During the writing of this plan an ad hoc committee for environmental education was formed. This group was composed of people who had attended the state environmental education conference and wished to take part in some activity that might lead to a statewide environmental education program. The committee meetings were used to discuss all of the items that are contained in this plan. While the activities of the Ad Hoc Environmental Education Committee are listed as a fifth step in the planning process, it must be realized that this was a continuous process.

In all, there were then five basic steps that were used in writing this plan for environmental education in Montana. The review of state environmental education plans, an opinionaire for basic input of data, interviews to allow environmental educators to elaborate on points expressed in the opinionaire, regional meetings to allow persons to react to the goals and implementation procedures which had been formulated, and continuous input from the Ad Hoc Committee for Environmental Education.

To assist the reader in understanding the discussion in the remainder of this plan it is necessary to define the terms, outdoor environmental laboratory, resident center, resident program, and environmental education.

DEFINITIONS

Outdoor Environmental Laboratory

An outdoor environmental laboratory is a piece of land either owned by a school, or to which the school has unlimited access, that is designated specifically for use by teachers and students for conducting environmental education lessons. Because this laboratory must be available at all times during the school day it should be separate from the playground, athletic field and other areas on the school site where students who are participating in some form of recreation will interfer with those students who are using the laboratory. For safety reasons the outdoor environmental laboratory should also be away from the parking lot and driveway to the school.

Resident Center

A resident center is a location where students and teachers can participate in environmental education activities for a period longer than the regular school day. The resident center provides sleeping and eating facilities for students and teachers as well as

various environmental education study sites.

Resident Program

A resident program in environmental education consists of the activities which are carried out at a resident center. The program is overnight and usually is either two nights and three days or four nights and five days. Traditionally, resident programs have been conducted for sixth grade students, but they can be conducted for students in any grade.

Environmental Education

Various definitions of environmental education are currently in use. Many people feel that environmental education is a new approach to learning. However, a close look at the definition of outdoor education used by the late Dr. L. B. Sharp in 1957 shows a direct relationship of outdoor education to environmental education. Dr. Sharp defined outdoor education as:

> . . . that which can best be learned inside the classroom should be learned there. That which can best be learned in the out-of-doors through direct experience, should there be learned.[2]

Dr. V. Eugene Vivian, the Director of the Conservation and Environmental Study Center at Browns Mills, New Jersey has defined

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[2]Julian W. Smith and others, Outdoor Education (Englewood Cliffs, N.J.: Prentice Hall, 1963), p. 21.

environmental education as the process which

> . . . creates a concern for all environments that leads to a commitment either to preserve or develop optimum environments, or to the improvement of less desirable environments.[3]

In The Environmental School, Mario Menesini wrote:

> The goal of the environmental awareness program is to create sensitivity that will lead people to a personal sense of involvement with their surroundings and to the eventual shaping of an ethic to guide environmental behavior.[4]

The above definitions are useful, but this writer feels the definition of environmental education found in Public Law 91-516 (the Environmental Education Act) is more in keeping with his philosophy of environmental education. The definition found in Public Law 91-516 is:

> Environmental education is the process dealing with man's relationship with his natural and man-made surroundings, and including the relationship of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total environment.[5]

All of the definitions for environmental education which have been quoted here may be considered incomplete in that they use the

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[3]V. Eugene Vivian and Thomas J. Rillo, Focus on Environmental Education (Glassboro, N.J.: The Curriculum Development Council for Southern New Jersey, 1970), p. 6.

[4]Mario M. Menesini, The Environmental School (Orinda, Calif.: Educational Consulting Service, 1970), p. 3.

[5]U.S. Department of Health, Education and Welfare, Environmental Education Act Handbook on Preparing Proposals (Washington, D.C.: Office of Education, 1971), p. 1.

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word environment to describe environmental education. To alleviate this problem the following definition is the one that should be remembered when the term environmental education is used in this paper.

Environmental education: the process dealing with man's relationship with his natural and man-made surroundings and including the relationship of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to his total surroundings.

HISTORICAL OVERVIEW

The definitions in the preceding section mentioned conservation education and outdoor education as well as environmental education. By examining some of the activities that have taken place in conservation and outdoor education programs it is possible to trace the evolution of these two disciplines to environmental education.

Using Dr. Sharp's statement concerning outdoor education:

> . . . that which can best be learned inside the classroom should be learned there. That which can best be learned in the out-of-doors through direct experience, should there be learned.[6]

it is possible to see that whether we use the term or not, some form of outdoor education has been carried out since education began with early man. However, it has been stated by Julian Smith that "the current

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[6]Smith, p. 21.

pattern of outdoor classrooms, or school camping as it was first termed, can be traced directly to two institutions--Life Camps, Inc. and W. K. Kellogg Foundation."[7]

The Life Camps were set up with the cooperation of the New York City schools in the late 1930's while the Kellogg Foundation, in cooperation with three Michigan schools, set up a year-round camp on the assumption that school experiences in a camp should be an integral part of the curriculum. The camping program served students from grades four through twelve who attended the camp for a period of two weeks during the regular academic year. In 1944, the program was considered so successful that all the schools of Calhoun County, Michigan, which includes Battle Creek, initiated a similar program.[8]

Other cities that followed the Battle Creek program were Tyler, Texas; Cleveland Heights, Ohio; Mobile, Alabama; San Diego, Los Angeles, and Long Beach, California; and the Highland School District in Washington State.[9]

These early school camp programs generally followed a conservation education approach. Such an approach placed a great

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[7]Smith, p. 97.

[8]Smith, p. 97.

[9]Smith, pp. 98-101.

deal of emphasis on such topics as erosion control, demonstration plantings and plant identification.

Conservation education has been defined by Julian Smith as "the development of concepts and attitudes in human beings which is reflected in their behavior relative to conservation."[10] Conservation education appears to have received its greatest emphasis during and immediately following the "dust bowl" period of the 1930's.

As the conservation education movement grew during the 1930's the Outdoor Education Association, Inc. (OEA) was formed. The purpose of the OEA was to:

> Promote living and learning in the out-of-doors; to disseminate information about outdoor education through publications, news letters, brochures, and films; to assist in preparing educators and leaders of schools, churches, and youth agencies in summer sessions, institutes, and workshops to use the out-of-doors as an integral part of instructional programs; and to conduct research in outdoor education.[11]

Other national organizations have also been formed that are concerned with what is now called environmental education. The Conservation Education Association (CEA), which was formed just over twenty years ago has been one of the most active groups promoting environmental education. Like the activities of the OEA, the

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[10]Smith, p. 25.

[11]American Association of School Administrators, Conservation--In the People's Hands (Washington, D.C.: AASA, 1964), p. v.

CEA has used newsletters, handbooks, and other types of information pamphlets to promote conservation education.

The American Association of Health, Physical Education and Recreation (AAHPER) began an Outdoor Education Project in 1955. This project has been devoted to the preparation of leaders for outdoor education, developing material for students to use in outdoor education activities, and the improvement of education through the use of the out-of-doors.[12]

Most recently the Environmental Education Association has beer formed. This was formed in 1971 and unlike the other organizations which have been named here the Environmental Education Association restricts its membership to college and university instructors who are interested in environmental education.

The recent formation of the Environmental Education Association does not mean that there had been no interest in conservation or outdoor education within institutions of higher education. A few colleges and universities have been involved in educating teachers for positions in outdoor or conservation education programs for several years. In 1949 the six state colleges in New Jersey began a program which required undergraduate education majors to spend one week at

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[12]Donald R. Hammerman and William H. Hammerman, eds., Outdoor Education, A Book of Readings (Minneapolis: Burgess Publishing Co., 1968), p. 158.

the New Jersey State School of Conservation near Branchville. Northern Illinois University provides firsthand experiences in outdoor education for education majors at its Lorado Taft Field Campus. Elementary education majors at Antioch College in Ohio have had the opportunity to work with elementary students in a field setting at the Glen Hellen Outdoor Education Center since 1957 and Southern Illinois University opened a 1,400-acre outdoor education center for use by public schools in the area in conjunction with the university's education program in the fall of 1963.

While the public school and university programs that have been mentioned dealt with conservation education Smith points out that:

> . . . Terms such as outdoor education, recreation and conservation education have common characteristics and are interrelated. None of them can be regarded as disciplines, for they have no basic content of their own. The content is in the long established disciplines, and the identity of the terms is dependent on the setting of the activities involved, the grouping of the experiences and their application.[13]

This statement is as applicable to environmental education as it is to outdoor education, recreation and conservation. The term environmental education appears to have first been used in 1965 or 1966 and rapidly began to replace the terms conservation and outdoor education.

With the passage of the Elementary and Secondary Education Act (ESEA) in 1965, environmental education programs proliferated

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[13]Smith, p. 26.

across the country. Title III of this act provided school administrators with funds to implement "innovative and exemplary" education programs.

In 1967 the New Jersey State Council for Environmental Education identified ninety-seven ESEA Title III environmental education projects within the United States. The projects ranged in size from those that served a single school district to those that served a consortium composed of over 125 school districts.[14]

It must be remembered that there were also environmental education programs that were not dependent on federal funds. Some of these programs were funded by the local school district, while others received grants from private sources. Likewise, many good teachers have been incorporating outdoor education and environmental education principles into their regular teaching style without attaching any label to what they are doing.

With the increase in interest concerning the environment which accompanied the first Earth Day in 1970, many schools conducted special programs relating to local and national environmental problems. At this time enough demand was made by educators and concerned citizens for additional money for environmental education

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[14]New Jersey State Council for Environmental Education, P.A.C.E. --Projects to Advance Creativity in Education (Mt. Lakes, N.J.: The Council, 1967).

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that Public Law 91-516 (The Environmental Education Act) was passed. This act would have provided up to forty-five million dollars for environmental education programs, but Presidential budget cuts in the field of education have reduced this amount significantly, as the following figures reveal. Total appropriations for fiscal years 1971-1973 were as follows: 1971, $2,000,000; 1972, $3,514,400; and for 1973, $3,180,000. The 1973 figure is lower because salaries and expenses were taken from the Office of Education salary and expense budget instead of from the Environmental Education Act funding as had been done in 1971 and 1972.[15]

At the same time that conservation and outdoor education programs were evolving into environmental education, the general public appears to have been in the process of becoming more aware of the environmental problems surrounding them. A portion of this increased awareness may be traced to various forms of mass communication, which have emphasized some of the more notable environmental mistakes.

Part of this change in the public's awareness may also be a result of the discovery that past environmental modifications which were expected to be a benefit to man have, instead, turned out to be

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[15]U.S. Department of Health, Education and Welfare, op. cit., p. 11.

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harmful to man. Perhaps the classic example of this is illustrated with the following passages, from different government publications. The 1949 Yearbook of Agriculture, Trees, includes the following statement:

> The development of DDT during the war [World War II] and several more remarkable insecticides since then--among them benzene hexachloride and chlordane--has presented an entirely new concept of the practicability of insecticidal control of forest insects. The toxicity of the arsenates or cryolite was so low that 15 to 30 pounds an acre was needed to obtain the same degree of control as can be achieved with 1/2 to 1 pound of DDT. During the season of 1947, more than 500,000 acres of forest land was treated in various parts of the United States with DDT at a rate of a pound an acre. Satisfactory control resulted at costs ranging from $1 to $3 an acre. Much more remains to be done in perfecting equipment and improving the technique of application, but it seems safe to generalize that the control of defoliator outbreaks in the future will be a sound and economical forest operation. On the average, from year to year more than 2 million acres of forest land is defoliated annually. This entails the destruction of 10 to 75 percent of the trees in outbreaks of many different insects and in all cases a tremendous reduction in growth in the trees not killed outright. It does not appear too optimistic to hope that more than one-half of this loss can be prevented by aerial spraying with the new chemical weapons supplied by science.[16]

By 1972 the consequences of the use of DDT had become so critical that the third annual report to the president by the Council on Environmental Quality includes the statement:

> In 1971 EPA (Environmental Protection Agency) initiated registration cancellation proceedings under FIFRA (Federal

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[16]United States Department of Agriculture, Trees, The Yearbook of Agriculture (Washington, D.C.: U.S. Government Printing Office, 1949), p. 411.

> Insecticide, Fungicide, and Rodenticide Act) against DDT, mirex, 2,4,5,-T, aldrin, and dieldrin. After extensive hearings on June 14, 1972, EPA banned nearly all uses of DDT. The Administrator said that the continued use of DDT over the long term, except for limited uses, posed an unacceptable risk to man and the environment. Because of DDT's persistence in aquatic and terrestrial environments, its insolubility in water, and its propensity to accumulate in the food chain and to be passed up to higher forms of life, the Administrator found that no warning, even if followed, could prevent injury to man and other animals.[17]

During the 1960's it appeared as though the general population became more aware of both air and water pollution as well as population growth. Some of this awareness may be attributed to the fact that air and water pollution were becoming more visible, and that the effects of population growth were also becoming noticeable. Beaches that had been adjacent to streams and lakes were closed because the water was contaminated and unfit for swimming. Those beaches which remained open became more crowded, not only because there were fewer beaches available, but also because of increases in the population.

Estuaries that had provided excellent locations for clams and other shell fish were closed to clamming because of pollution. Clams taken from these areas were contaminated by the polluted water and were unfit for human consumption.

Air pollution, in some degree, has been visible since man

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[17]Council on Environmental Quality, Environmental Quality, The Third Annual Report of the Council on Environmental Quality (Washington, D.C.: U.S. Government Printing Office, 1972), p. 125.

discovered fire. Most controls that have been attempted regarding air pollution have focused on reducing the amount of smoke in the air. Perhaps the citizens of Los Angeles were the first to become aware of the fact that smoke was not the only, or even primary, cause of air pollution.

> When the citizens of Los Angeles began to complain of smog, few people suspected that air pollution was a great deal more than just smoke. Los Angeles used virtually none of the fuels primarily responsible for the smoke problems in cities elsewhere; yet smog appeared and worsened. Dr. Aire J. Haggen-Smit, of the California Institute of Technology, finally pinpointed the principal sources of photochemical smog in Los Angeles--hydrocarbons and nitrogen oxides from automobile exhausts. Smog was at first thought to be a phenomenon amplified by local weather conditions and limited to Los Angeles. Today, however, most major cities are afflicted to some degree by photochemical smog as well as other forms of air pollution.[18]

Now, instead of referring to air pollution as smoke, research has shown that there are five main classes of air pollution: carbon monoxide, particulates, sulfur oxides, hydrocarbons, and nitrogen oxides. These types of pollution are not equal in terms of damage they cause. For instance, a ton of sulfur oxides, specifically sulfur dioxide, is more damaging to human health than is a ton of carbon monoxide.[19] While it is not known exactly what the long-term effects

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[18]Council on Environmental Quality, Environmental Quality, The First Annual Report of the Council on Environmental Quality (Washington, D.C.: U.S. Government Printing Office, 1970), p. 62.

[19]Council on Environmental Quality, 1972, p. 6.

of various forms of air pollution are on a person's health, it is generally accepted that the five substances listed above are the ones that should be the most carefully monitored and reduced as far as possible.

Population is a third factor which is increasing rapidly and has the potential for causing great harm to the environment. Evidence of increases in the overall population are visible in many respects. Roads that were once uncrowded are now crowded, school enrollments increased greatly in the 1960's, and housing developments and shopping centers have appeared in many areas that were sparsely populated a short time ago. In the United States it appears as though the period of rapid population growth that was characteristic of the country after World War II and continued into the 1960's may be at an end. However, this does not appear to be true for the remainder of the world except for northern Europe. In 1973 the Population Reference Bureau estimated that the population of northern Europe was growing at an annual rate of 0.7 percent and that of northern America (the United States and Canada) was 0.8 percent. In contrast to this the Population Reference Bureau estimated that the population of Latin America was growing at an annual rate of 2.8 percent, Africa was expanding its population at an estimated rate of 2.5 percent and the population of Asia was estimated to be expanding at a rate of 2.3 percent.[20]

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[20]Population Reference Bureau, "1973 World Population Data Sheet" (Washington, D.C.: The Bureau, 1971).

Predictions concerning the collapse of various segments of the world's population, or the collapse of the entire world's population are not new. Thomas Malthus (1766-1834) predicted that the human race was on the verge of collapse because the world's population was growing at a geometric rate while food supplies were growing at an arithmetic rate.

One of the most recent reports to indicate that there is a strong potential for the human race to destroy itself through overuse of the environment is the report Limits to Growth issued by the Club of Rome. The Club of Rome report used computer analysis of current rates of consumption of various resources, population growth, and economic growth, as well as increases that have been recorded in levels of pollution and projected these into the future. The conclusion of the report states that if man continues his current activities a major ecological disaster is sure to occur within the next two hundred years.

An overview of environmental problems in Montana shows that some of the same environmental problems that exist in other portions of the world exist in Montana. As early as 1885 air pollution was recognized as harming the vegetation in the Butte area.[21] Butte

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[21]Robert Bighart, Environmental Pollution in Montana (Missoula: Mountain Press Publishing Co., 1972), p. 2.

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was the first city in Montana in which the residents became concerned about air pollution. Today many of the residents of Helena, Missoula, Columbia Falls, Garrison and other towns in Montana are concerned about the quality of the air in their area. The substances polluting the air are not the same in all of these towns. Butte's air has sulfur compounds in it, while Columbia Falls' air has fluorides and Helena's air has lead polluting it.

Water has also become polluted in Montana. The whitefish in sections of the Bitterroot River have been found to contain more mercury than the World Health Organization studies recommend in fish that are to be consumed by humans.[22] Portions of other streams in Montana are also polluted. Silver Bow Creek has been described by Bighart as an ecological disaster from Butte to Warm Springs because of chemicals leaching into the stream from nearby mining operations.[23] Silver Bow Creek is a tributary of the Clark Fork River and therefore affects the water quality in the Clark Fork.

But air and water are not all that have become polluted. Vast sections of Montana have been contaminated by pesticides such as DDT, aldrin, dieldrin, endrin, heptachlor, lindane and chlordane. These

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[22]"Mercury in Montana Wildlife" (Helena: Montana Fish and Game Department, 1970), p. 5.

[23]Bighart, p. 147.

pesticides have been used both in the western forests and eastern agriculture and grazing land in Montana. DDT has a half-life of approximately twenty years which means that even if all applications of DDT were to stop today its effects would linger. While federal law now requires special permits for the use of DDT, there is now a highly emotional debate taking place in Missoula regarding a proposal to use DDT for control of the tussock moth in some areas of the forests near Missoula.

Other potential environmental degradation activities are also under way in Montana. These include unregulated land development, the possibility of weather modification, clearcutting of large blocks of forest land, strip mining to obtain coal, and the building of new industrial plants in geographic areas with a record of thermal inversions. Population problems may also occur in some areas of the state if the anticipated strip mining occurs and large numbers of people move into the state to seek employment in mining and related activities.

With these activities which are having an impact on the environment in Montana in mind, the following statement, from the forward of the American Association of School Administrators' book, Conservation--In the People's Hands, seems most appropriate.

> The care, development, and use of natural resources in this country have been entrusted to the people individually and collectively. This widespread delegation of an important

> responsibility is the very essence of democratic government and is intricately related to the operation of private enterprise. The manner in which this responsibility is met depends in great measure upon a broadly conceived educational program that reaches all the people.[24]

It is not possible to say that education can, or will, by itself prevent any environmental disaster from occurring. However, it appears reasonable to assume that education can assist people in making rational judgements and choices in the future. If rational choices are to be made, environmental problems must become a part of the curriculum. A few of the school districts in Montana have begun to do this with meaningful and productive environmental education programs.

ENVIRONMENTAL EDUCATION PROGRAMS IN MONTANA SCHOOLS

Billings

In Billings an environmental education program was begun in the spring of 1967 that involved one teacher and thirty students in a camping situation. The program has expanded and now involves all public, private and parochial elementary schools in Billings. This is a total of twenty-eight schools, approximately sixty teachers and 1650 sixth grade students.

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[24]American Association of School Administrators, p. v.

The program began under the direction of Doctors Erick Erickson and Wilson F. Clark. Dr. Erickson was the principal of the campus school at Eastern Montana State College and Dr. Clark the chairman of the Science and Mathematics Division at Eastern Montana State College. In the summer of 1971 the Billings School Board accepted the general responsibility of the in-school and in-camp components of the program and Eastern Montana College accepted the role of handling the in-service and pre-service education related to the program.

The Billings program is also unique when compared to other Montana environmental education programs in that it has never received any state or federal funds. The program directors originally relied on funds from the Parent Teachers Association and some local service clubs, but in 1972 funds for the program were included in the budget for the Billings Public Schools. The project has also received no funds from Eastern Montana State College.

The resident program is conducted in the spring and consists of three days and two nights in a camp setting. Classes attending the resident program are divided into four groups and spend approximately one-half day in each of the following activities: wildlife studies, geological studies, ecological studies and plot studies. In addition to the group activities, the students do have some free time and take part in some activities of their choice during this time. The

optional activities include art, first aid and archery. A typical schedule for the three days is found in Appendix G.

In addition to conducting the resident program some of the teachers in Billings, in cooperation with five instructors at Eastern Montana State College, have prepared a collection of lesson plans and other activities related to environmental education. The purpose of their book, Exploring the World, is to provide:

> . . . many activities to you [the student] and the skills you need in order to learn how this old world works. With these skills you can then explore the world, by carrying on studies and investigations of various natural ecosystems of communities of plants and animals.[25]

To accomplish this, the book has lessons that are grouped into the following categories:

Plant ecology
Aquatic ecology
Plot study
Geographic studies
Geological studies
Stream studies
Weather and climate studies
Environmental degradation
Living things
Physical factors
Social science units
Mathematics units
Art and creative activities[26]

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[25]Eastern Montana College Environmental Education Project, Exploring the World (Billings: Eastern Montana College, 1973), p. v. (Mimeographed.)

[26]Eastern Montana College Environmental Education Project, pp. ii-iv.

Great Falls

The Great Falls environmental education program began with a federal grant, but is now operating on local funds. The funding was obtained under the provisions of Title III of the Elementary and Secondary Education Act of 1965 (ESEA). In its first year the Great Falls project received approximately $70,000 in federal funds; this amount was decreased by approximately $10,000 in each of the two succeeding years of federal funding.

While the Great Falls Public School District was receiving federal funds for the environmental education project, a resident program was conducted. This portion of the program has been phased out because of the expense.

The present program has specific components for students in grades three through six, plus the eighth grade, as well as providing material to teachers in all grades who request assistance with environmental education.

The specific programs for grade school students begin with third grade. In May the third grade students participate in a one-half day activity which consists of a visit to a woodland pond. This trip is designed as much to begin to acquaint students with activities outside the classroom as it is to teach them some of the interactions between plants and animals found around the pond.

Students in the fourth grade are taken on a one-day field trip in the spring to take part in soil testing, examine soil horizons, see how different soil types affect vegetation growth and observe some areas of saline seep. Fourth grade students also visit the water purification plant in January to learn the fundamentals of how drinking water is treated before use.

In March students in the fifth grade are generally taken to the Great Falls waste water treatment plant to learn how the city treats waste water. This year there was new construction at the sewage treatment plant so students visited the Anaconda Company, Montana Power Company and Malstrom Air Force Base to learn how these locations treat waste water. As with the students in the other grades, the topics that are observed on the field trips are discussed in the classroom both prior to and after the field trip. The teachers incorporate the field trip topic with both science and social studies lessons. This prevents the trip activity from becoming nothing more than a day away from school with no real tie into the existing curriculum.

One of the sixth grade environmental education activities includes a trip which parallels the Missouri River through Great Falls. The purpose of this trip is to see what activities in the town affect the water quality. This trip builds on the fourth and fifth grade activities related to water use and treatment.

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Sixth grade students are also taken on two one-day field trips near Hartsville and Neihart to make comparisons of grassland and coniferous forest biomes. This trip includes visits to the following vegetation growth areas: wheat farm (monoculture), prairie, river bottom, coniferous forest, lumber harvest area, mined area and transitional areas between some of the preceding areas.

The eighth grade students take a geology field trip in connection with their earth science courses in the spring. All of these trips have been conducted at no expense to the student.

The environmental education department of the Great Falls Public Schools has a director and two full-time environmental education teachers. Their duties include scheduling trips, assisting teachers during the field trips, conducting in-service workshops dealing with environmental education and preparing teacher/student materials for use on field trips. To date, the environmental education staff in the Great Falls schools has written a teachers' manual for those field trips in which the students participate. Each manual has pre-trip, trip, and post-trip activities. The manual for each trip is designed to relate science, social studies, English and art activities to the activities the students will participate in during the field trip. The staff is also developing additional manuals for use in the classroom and on the school ground.

As a portion of the final evaluation of the Great Falls Environmental Education project that was federally funded, a comparison study of students who had and had not participated in the program was conducted by the Educational Psychology Department of Montana State College. At this time (March 1974) the results of this study are not available.

Powell County

In January 1971, the Powell County School District was the recipient of an ESEA Title III grant which provided funds for the implementation of an environmental education program. The objectives of the program were:

1. To provide all the students in Powell County elementary schools with experiences in environmental education.

2. To provide leadership and training for each rural board regarding educational improvement and community involvement in the areas of:
   a. the relationships between man and his environment, and,
   b. the role of the school, both in general, and with respect to the above relationships.

3. To evaluate and inventory the equipment and the projected equipment needs of Powell County elementary schools in the area of science, paying especial emphasis to environmental education.

4. To provide a series of in-service training sessions on environmental issues for teachers for all rural and elementary schools involved in the project.

5. To purchase and/or produce, with the aid of teachers participating in the in-service training sessions, at least six sets of environmental training kits.

6. To evaluate and inventory the biological and environmental qualities of the immediate areas of each school in terms of outdoor science laboratories. To produce, by fall of 1971, a booklet describing these areas and their potential use by all county school students and giving specific suggestions for the development of arboretums or similar facilities at each school site.

7. To evaluate the effectiveness of materials provided by the center.

8. To demonstrate to the county school system the value, importance, and necessity of these types of service.[27]

The environmental education center in Powell County has been located in the high school in Deer Lodge. This serves as a central location where teachers may check out a wide variety of equipment and material for environmentally related lessons.

The project has a director and one full-time assistant. They have been responsible for conducting in-service programs designed to show teachers how to incorporate environmental education activities into their existing lessons. The director has also been working with teachers and students to develop material for classroom use that will relate environmental education to the existing curriculum.

As was stated in the program objectives, the staff has also worked to develop outdoor laboratories near all the schools in the county. Some of these laboratory sites are not adjacent to, or within

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[27]Division of Education Research and Services, Environmental Education in a Rural Setting (Missoula: University of Montana, 1971), p. 2. (Mimeographed.)

walking distance of, the schools that they are designed to serve. There has been no resident component of the Powell County environmental education program.

Federal funding for the Powell County environmental education program expired in January 1974. Local funding will continue the program at least through the 1973-1974 academic year, but no official announcement has been made as to the overall fate of the program after that. Even if funding is not continued it appears that many teachers who have been closely involved with the project would continue to make environmental education programs an integral part of their classroom activities. This could be done by using the material for teachers and students that has been produced to date, growing out of the in-service programs that were conducted by the center staff.

An evaluation of the program that was conducted in 1973 by the Division of Education Research and Services of the University of Montana states:

> The evaluation of test data and field trip data suggest that the goals of improved understanding of environment are being fully accomplished. Students feel that the program is a vital part of their learning experience.[28]

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[28]Division of Education Research and Services, Environmental Education in a Rural Setting (Missoula: University of Montana, 1973), p. 45. (Mimeographed.)

The evaluation report goes on to state:

> The following recommendations are offered for continued improvement and evaluation of the program:
>
> 1. That the testing program continue with all students involved in the program. Also that the cognitive and affective test be administered to students who are not involved in the Powell County program to give a comparison between students who are in environmental education and students who are not in a program.
>
> 2. Continue to develop materials in conjunction with the teaching staff. New and varied material will keep interest and encourage the students to look at all aspects of the environment. Integration of the program in the total curriculum is important.
>
> 3. The field trip program should continue to be improved. Student suggestions should be considered as a part of this improvement.
>
> 4. Continue periodic in-service for the teachers of Powell County. This will provide needed help to new staff of the schools and enable all staff members to discuss new ideas concerning environmental education.
>
> 5. The total program should continue to be evaluated by students, teachers, and the community.[29]

The report concludes with the following statement:

> It can be seen by the test results and the student feedback that the program is achieving the results it set out to obtain. The program reflects a high level of interest from all segments of the Powell County community. The Powell County Environmental Education Program can serve as a model for other schools to follow.[30]

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[29] Ibid.

[30] Ibid., p. 46.

Mr. Swant, the Powell County Environmental Education Director, has stated that he is pleased with the overall accomplishments of the project and that environmental education has not become something which receives attention only during a period such as earth week.[31]

Hamilton

The Hamilton environmental education program has received funds through the provisions of Title III of the Elementary and Secondary Education Act of 1965. Like the other three programs that have been discussed in the preceding pages, the environmental education program in Hamilton has concentrated a great deal of time and effort on developing material that classroom teachers can use to relate environmental topics to the existing classroom material.

The specific objectives of the Hamilton environmental education project are:

1. Create an articulated and integrated environmental studies curriculum for grades one through twelve such that each student gains an awareness of man's environmental problems for the present and for the future (i.e., integrated into all subject areas and at all grade levels).

2. Organize a cumulative guide to provide pertinent information concerning personnel, organizations, and agencies contributing to or participating in environmental education. This guide is to contain a list of materials and services available for use with students.

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[31]Ibid., p. 4.

3. Develop within each student the conceptual framework for the following:
   a. Ability to state, in philosophical terms, his relationship to his environment;
   b. Inter-relationships of man and his total environment, i.e.,
      1) Man with man relationships,
      2) person with culture relationships, and
      3) person with nature relationships;
   c. Change is a continual process and is caused by nature and man; and
   d. Relationships of natural resource base, standard of living, and human population.

4. Develop a curriculum and resource guide and materials to provide a built-in, cost-free dissemination of the effects of the project.

5. Conduct an in-service program for teachers, administrators, and other school personnel.

6. Hold workshops for non-school personnel, particularly those providing resource services for the curriculum.

7. Establish cooperative efforts with the Montana Conservation Council to exchange information that will be incorporated into their environmental curriculum guide.

8. Provide adult education workshops for community members.[32]

An interim evaluation report which was conducted during the 1971-1972 academic year concluded that:

> . . . there is evidence in the student, instructional, and administrative dimensions of the evaluation that the following objectives are currently being implemented:

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[32]Gary Hall, Environmental Education in Hamilton School District, Evaluation Report (Hamilton, Mont.: Hamilton School District, 1972), p. 7. (Mimeographed.)

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1. An integrated and articulated environmental studies curriculum (K-12) is being implemented.

2. A curriculum guide has been developed and will continue to be updated.

3. Students are developing affective and cognitive skills related to environmental education.

4. Instructional materials are being developed and implemented involving teachers and administrators of the district.

5. In-service programs have been developed and implemented involving teachers and administrators of the district.

6. Initial attempts have been made to develop and encourage community involvement.

The Hamilton school district has conducted no resident environmental education program during the regular school year. However, in the summer of 1972 there was a program for boys from the Hamilton schools that featured a ten-day camping experience in the Selway-Bitterroot Wilderness Area near Hamilton. This experience was designed not only to show the boys some fundamentals of backpacking, but also to see if this was an effective way to teach them about some environmental problems and basic principals of ecology. An extensive study of this wilderness session is being conducted, but the results are not available at this time.

In the summer of 1973 the Director of the Hamilton Environmental Education Project conducted two five-day wilderness trips for teachers. These trips were designed to acquaint teachers with the methodology they could use to tie field activities into their existing

curriculum. A total of fourteen teachers took part in these two workshops.

In an attempt to have more field activities carried out by the teachers in Hamilton, the project director has overseen the development of two outdoor laboratories within the school district. Both of these laboratories are along the Bitterroot River within the city limits of Hamilton.

At one of the two outdoor laboratories a building was constructed in hopes that it would serve as a facility to house a library as well as equipment that could be used at the site. The construction of the building showed a high degree of cooperation on the federal and local level in that the construction was carried out as a portion of a carpentry training program of the Trapper Creek Job Corps Center. Unfortunately, the building burned and arson is suspected. The fire occurred before any equipment was moved into the building so no equipment was lost.

The fire affected the program in terms of morale and lack of adequate facilities. However, at the present time, winter of 1973-1974, the status of the entire program is uncertain in regard to continued funding by the board of education.

ENVIRONMENTAL EDUCATION PREPARATION

At the present time all teacher education units of the University of Montana System offer at least one course that deals with conservation for education majors. This course is required for all elementary education majors at each state school except at Western Montana College where it is offered as an elective. At each of the schools this course deals more with facts and figures concerning conservation/environmental problems than with methodology concerning how to integrate this topic into other subject areas. With the exception of Eastern Montana State College and the University of Montana there are no courses offered to education majors that deal with the methodology involved in making environmental education an integral portion of the entire curriculum.

As was shown in the discussion of the Billings environmental education project, education majors who elect to take environmental education courses at Eastern Montana College are provided with the opportunity to work with the sixth grade students and teachers in the Billings resident environmental education program. This is the only opportunity in the state for education majors to work with a resident environmental education program.

As early as 1950 the University of Montana was conducting a "conservation workshop" for teachers. This workshop was a regular

feature in the summer school catalogue for the following seventeen summers. The 1966 Summer Session Bulletin for the University of Montana describes the workshop as follows:

> Seventeenth Conservation Education Workshop
> July 21 to August 19
> For Teachers and Administrators
>
> The natural beauty of the Missoula area, the opportunity to study the out-of-doors in a natural setting under competent instructors, the association with noted consultants from private, state, and national agencies combine to make this a unique educational experience.
>
> Lectures, discussions, and films are supplemented with carefully planned field trips. These field trips with the cooperation of various private, state and federal agencies make possible first-hand experience with conservation of soil, minerals, oil, timber, grasses, water and wildlife.
>
> Elementary and secondary teachers and administrators who take part in the workshop will study basic principles of conservation of natural resources, observe conservation problems and practices, prepare materials for teaching conservation in the elementary and secondary schools. From six to nine undergraduate or graduate credits may be earned in the workshop.[33]

Records in the School of Education at the University of Montana show that in 1966 the enrollment in the Conservation Workshop was five students. This decline in enrollment was the major factor in canceling the workshop in 1967 and subsequent years. However, in 1967 two courses in conservation education were offered during the academic year and in the summer session. One was Conservation of Human and Natural Resources and the other was

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[33] Summer School Bulletin (Missoula: University of Montana, 1966), p. 11.

Problems in Conservation Education.

It is important to note that these same courses, with updating of content, as well as slight name changes, are now offered during the regular academic year as well as the summer session. Also, the enrollment has increased from the 1966 low of five students to approximately sixty-five in Conservation of Human and Natural Resources of Montana in the summer of 1973 and approximately forty-five during fall quarter of 1973. There were approximately thirty students in an environmental education seminar in the summer of 1973 and fifty-four students in the course Methods of Teaching Environmental Education in the autumn of 1973.

Education majors who elect to take Problems in Environmental Education at the University of Montana are given the opportunity to assist the directors of the Deer Lodge or Hamilton environmental education projects. This provides the education students with an opportunity to compare the actual and theoretical aspects of environmental education.

Units of the University of Montana System offer environmental studies courses. These courses are not included in this discussion because they are not specifically designed to acquaint teachers, or potential teachers, with environmental education methodology. Also, these courses are not required for any education majors and therefore do not fall into the general area of teacher

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education.

Montana Department of Public Instruction

The Montana Department of Public Instruction has also been involved in environmental education activities that extend beyond the limits of the school districts previously mentioned. In December 1972 the Department of Public Instruction published an Environmental Education Handbook. The handbook consists of twenty units representing various subject areas. The units are designed for students of different ability. When using the handbook it is important to remember the following statement from the handbook. "The cells (units) are not meant to be the total content for an environmental education approach; they are offered only as stimulants, as samples and as sources of information and ideas."[34]

The authors of the various units in the Environmental Education Handbook have made the following statement which must also be kept in mind while using the handbook:

> Environmental education should not be considered another subject to fit into the school curriculum; more realistically, it may be considered a philosophy of education. In this context, environmental concepts can be incorporated into the teaching-learning situation of existing subjects at every grade level.[35]

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[34]Roy C. White, ed., Environmental Education Handbook (Helena: Department of Public Instruction, 1972), p. 1.

[35]Ibid., p. 3.

The handbook is now being field tested in selected school districts within Montana and will then be revised as necessary prior to its distribution to all schools in Montana.

The Department of Public Instruction sponsored twenty-two day-long training sessions designed to show teachers how more environmental education can be a part of their daily teaching. All school superintendents in the state were contacted during the spring of 1973 to see if they would like their teachers to participate in such a training session. A total of forty-four school district superintendents requested such a session for their teachers. These training sessions were combined and a total of twenty-two workshops were conducted. The workshops were lead by Mr. Gary Swant, the Powell County Environmental Education Program Director.

ENVIRONMENTAL EDUCATION ACTIVITIES SPONSORED BY FEDERAL AND CIVIC GROUPS

Civic Groups

In 1971 the National Council of Garden Clubs began a two-year project which had as its goal the objective of putting copies of People and Their Environment: Teachers' Curriculum Guide to Conservation Education in all schools in the country. The Montana Garden Clubs participated in this project, and the Montana Power Company assisted them by purchasing 150 copies of the guide for first, second and third

grade teachers.

In addition to the People and Their Environment: Teachers' Curriculum Guide to Conservation Education guide for first, second and third grade teachers, there are guides for fourth, fifth and sixth grade teachers; science teachers in grades seven, eight and nine; biology teachers, social studies teachers in grades seven, eight and nine; and ten, eleven and twelve; home economics teachers in grades nine, ten, eleven and twelve; and one guide for all teachers using an outdoor laboratory. While the garden club project was laudable, it appears to be falling short of expectations because teachers are often not informed of the fact that the guides have been placed in the school, or teachers have not been made aware of the contents of the guide. Each guide has the same three basic concepts. These are:

1. Living things are interdependent with one another and with their environment.

2. Organisms (or populations of organisms) are the product of their heredity and environment.

3. Organisms and environments are in constant change.[36]

These guides were designed to provide a program of action, i.e., they are a collection of lesson plans that can be adapted to various subject areas, rather than being a statement of the need for

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[36]Matthew J. Brennan, ed., People and Their Environment, Teachers' Curriculum Guide to Conservation Education (Chicago: J. G. Ferguson Publishing Co., 1969), p. 4.

environmental education.

Federal Activity

The Soil Conservation Service has developed both student and teacher material that can be used in environmental education programs. This material is usually available from the county Soil Conservation Office. It is free or obtainable at a nominal cost, if teachers request the material. As with many sources of information, teachers are often unaware that this information is available and hence do not request the material.

Similarly, the Soil Conservation Service has information booklets that will assist school administrators in planning outdoor laboratories. The Soil Conservation Service will also provide technical assistance, as time permits, to schools that request assistance with outdoor laboratory development.

The United States Forest Service has also been involved in environmental education activities. The objectives of the Forest Service environmental education program are:

> To help the people understand and appreciate the Nation's natural resources.
>
> To foster support of, and participation in, wise management of these resources, ensuring their continuation while safeguarding a quality environment.[37]

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[37]Forest Service Manual ([Washington]: U.S. Government Printing Office, December 1971), Amend. 34, section 1623.02.

There are nine elements of the Forest Service environmental education program. The first two elements are the most important according to the Forest Service, but this should not be taken to mean that the other items can be ignored. The elements are:

> Teacher Training.
>
> Establishment of environmental education sites of all types on National Forest lands (also includes grasslands and research areas).
>
> Education and information programs for people other than educators.
>
> Planned use of mass media for environmental education purposes.
>
> Cooperative participation in curriculum development.
>
> Cooperative projects with other public agencies.
>
> Planned coordination of various in-agency programs which have environmental education potential.
>
> Joint projects with appropriate foundations and organizations, including use of outside funding.
>
> Continual review and updating of materials, including use of new instructional media as developed.[38]

As a first step in attaining their objectives the Forest Service held twelve workshops for Montana teachers in the summer of 1973. These workshops were held throughout the state so that teachers would be able to attend one in their area and the content could be

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[38]Ibid., section 1623.1.

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directed to local environmental issues involving the Forest Service. Each workshop was three days in duration and participants could obtain university credit for successfully completing the workshop. Approximately five hundred teachers participated in the workshops.

The National Park Service has undertaken a three-pronged approach to environmental education. Their programs are the National Environmental Education Development (NEED) program, the National Environmental Study Areas (NESA) program, and the National Environmental Education Landmarks (NEEL) program.

The NEED program has concentrated on curriculum development. At least one workbook for students in sixth grade is now available, and others are expected to be available soon. The NESA program has concentrated on designating environmental study sites within national parks. These sites are being set aside for school use when possible. The NEEL project is an effort to preserve naturally significant environmental study areas not under federal jurisdiction.[39]

Additionally, Mr. Alan Mebane, Chief Naturalist at Yellowstone National Park, has worked with teachers in West Yellowstone, Bozeman, Livingston and Gardiner in an effort to increase their competency in teaching about environmental problems.

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[39]Council on Environmental Quality, Third Annual Report, p. 145.

The Montana Fish and Game Commission prints environmental education material that is available free upon request to classroom teachers. In addition to this free material, the commission tries to include some information designed specifically for classroom use in each issue of Montana Outdoors, their official publication. This magazine is sent free to all school libraries in Montana. Mr. Vince Yannone, the Youth Education Coordinator for the Fish and Game Commission, estimates that in 1972-1973 he conducted environmental education activities for approximately two hundred groups of students, teachers and campers.

THE NEED FOR A PLAN

The above activities are representative of environmental education activities now occurring in Montana schools. In some districts more than one group is promoting environmental education in the school district, while in other districts there is no environmental education activity. Environmental education activities which exist are being conducted on a local level, because there is no state environmental education plan that suggests ways to maximize the use of currently available environmental education material in Montana.

When John W. Gardner was Secretary of the Department of Health, Education and Welfare he stated:

> We Americans have a great and honored tradition of stumbling into the future. . . . We are just coming to understand how wasteful this can be.[40]

A plan for environmental education, like any other plan, should help the state move into the future without stumbling and with much less waste than if there is no plan to follow.

All planning, whether it be for education or community development, must be future oriented. It is necessary to establish goals and then examine how these goals can be reached in a logical manner. However, it must be understood that:

> The prime purpose of planning must clearly be to assist in the making of rational decisions today. Quite often, the effect of planning on such decisions would be to keep open the possibility for adaptation to various potential roads of future development.[41]

If the above seems contradictory to the future orientation it might help to remember that decisions we make today may have long-range effects. It should be noted that a plan is not doctrine, but as pointed out above, decisions based on the plan should keep open, rather than close, potential roads for future development. As such, ". . .planning is the process which precedes decisions."[42] With a sound plan there

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[40]Stanley Elam and Gordon M. Swanson, eds., Educational Planning in the United States (Itasca, Illinois: F. E. Peacock Publishers, Inc., 1966), p. 51.

[41]Elam, p. 85.

[42]Elam, p. 168.

should be a better basis for decisions. With no plan there is no basis for decisions other than what might be called intuitive feelings which are hard to define and justify.

The Superintendent of Public Instruction has requested the Montana State Legislature to provide funds for the employment of an environmental education supervisor. While the funds were not provided this year, a plan should still be useful because more and more people are becoming involved in environmental education programs and such a plan, if made available to them, might provide a framework upon which they could base their decisions regarding environmental education.

A plan is an organizational chart which may assist any group in moving into the future. It establishes goals and a means to achieve these goals. However, it does not establish a course of study to be taught in each school. Instead it presents various alternatives, such as teacher training, new curriculum programs, or changes in existing programs. The plan is a document which can be used by administrators at all levels to help them establish and implement an environmental education program.

Chapter 2

A REVIEW OF EXISTING STATE ENVIRONMENTAL EDUCATION PLANS

INTRODUCTION

One of the major sources of information that was used in developing an environmental education plan for Montana was the environmental educational plans that have been developed for the states of Alaska, Delaware, Maryland, New Jersey, Ohio, Oregon and Washington. The report "Environmental Education, A Report to the North Carolina General Assembly" was also reviewed. It will be considered as a state plan throughout this discussion because of the recommendations concerning a statewide environmental education program contained in the report. In addition, position papers dealing with environmental education in West Virginia and Iowa were studied as was a proposal for developing an environmental education plan in Illinois.

The examination of these plans and position papers that was conducted consisted of looking for similar goals or objectives, unique ways of implementing programs, outstanding features of any plan and weaknesses in any plans. This was done to determine what strong

points might be applicable for inclusion in the state plan for environmental education in Montana, and what weak points should be avoided.

This chapter will concern itself with the content of the plans that were examined. In Chapter 4 a chart will be presented that shows how the goals that have been arrived at for environmental education in Montana compare with the goals found in the state plans named above.

In examining the state plans it was found that there were four goals that were common to all the state plans for environmental education. These goals are: 1) the formation of an advisory council for environmental education, 2) restructuring the curriculum to include environmental education concepts, 3) pre- and in-service education programs for teachers, and 4) the employment of an environmental education supervisor by each superintendent of public instruction.

Each of these goals, and how the different states treat these topics, will be discussed below. In addition, there will be a discussion of other unique points found in the plans as well as weaknesses found in the plans. It is necessary to mention that not all the state plans are of uniform format or quality, nor is terminology uniformly consistent. What is referred to as a goal in one plan is an objective in another and a recommendation in a third. The three terms, objective, goal, and recommendation will be used interchangeably in this chapter. This is necessary because some states

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have objectives listed, others have recommendations while still others have goals, yet when these are compared it is felt that they are similar enough to use the same descriptive term for each.

ADVISORY COUNCILS

The states of Maryland, New Jersey and Oregon have established advisory councils for environmental education. In these three states the advisory council was primarily responsible for writing the environmental education plan for that state.

North Carolina has a task force for environmental education. This task force was appointed by members of the State Board of Education and the State Superintendent of Education. The members of the task force were responsible for preparing the report, Environmental Education, A Report to the North Carolina General Assembly. The task force recommended that an environmental education advisory council be established. Since the task force has members from a cross section of the population, and it is recommended that the advisory council have similar membership, it is unclear if the advisory council will have the same members as the task force, or other members.

The environmental education plan for Delaware was developed by the Delaware Conservation Education Association. The writers of the Delaware plan "propose that the Delaware Conservation Education

Association serve as a volunteer state coordinating council for environmental education."[1] The writers of the Delaware plan point out that the Delaware Conservation Education Association has members who come from the following areas of employment:

> Classroom teachers
> College teachers
> State Department of Public Instruction
> United States Soil Conservation Service
> State Department of Natural Resources and Environmental Control
> Industry
> Communications media
> Special education programs
> Private organizations[2]

The representation of governmental and nongovernmental groups which make up the membership of the Delaware Conservation Education Association is similar to that which makes up the membership of the state advisory councils for environmental education which now exist or which are proposed in all the state plans that were examined with the exception of Ohio. However, the Alaska environmental education planners recommend that the Alaska advisory council have ten members, while the New Jersey advisory council would have twenty members if that state's plan is implemented.

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[1] Delaware Conservation Education Association, Inc., A Delaware State Plan for Environmental Education (Dover, Delaware, 1972), p. 31.

[2] Ibid.

The Ohio environmental education planners recommend the creation of two advisory councils, one consisting of members of governmental agencies and a separate one made up of citizens from various other organizations. Thus they would have the following organizational structure:

Interagency Steering Committee

The interagency steering committee would be composed of eight members, one representative from each of the following state agencies:

1. Department of Agriculture
2. Department of Commerce
3. Department of Development
4. Department of Education
5. Department of Health
6. Department of Natural Resources
7. Department of Urban Affairs
8. Board of Regents

The representative should be of deputy director rank and the representative from the Department of Education would serve as Chairman, at least in the early phases of the operation of this steering committee.

The steering committee would have the assigned task of directing the structure, development and implementation of the statewide environmental education program. This would be accomplished primarily by processing the direction given by the General Assembly of the State of Ohio, the State Board of Education and the State Advisory Council on Environmental Education. The Steering Committee would recommend specific action projects and programs to be implemented through the environmental education section of the Department of Education, it would establish priorities, and seek financial support for these programs.

The State Advisory Committee

The State Advisory Committee is an already functioning committee. This committee was established via a resolution from the State Board of Education in April 1970 and has the primary task of advising the Department of Education as an

> environmental education program is developed. In the organizational structure proposed, this Advisory Committee would place its input directly into the Interagency Steering Committee for processing. The Steering Committee would then select the most appropriate department and/or method for implementing the recommendation.[3]

The Iowa and West Virginia position papers for environmental education and the Illinois proposal for a state environmental education plan were also studied to see what, if any, recommendations were found in them concerning advisory councils for environmental education. None of these specifically called for the formation of an advisory council, yet the Iowa position paper was written by an "Environmental Education Task Force."

The Proposal for the Development of a Master Plan for Environmental Education for the State of Illinois requests that the governor:

> Establish a trans-disciplinary task force that is representative of all appropriate state agencies, private organizations, and interest groups to develop a master plan for environmental education for Illinois.[4]

This proposal would give the "trans-disciplinary task force," or advisory council, the responsibility for developing the plan for

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[3]"Ohio Environmental Education Plan" (Draft), (Columbus, Ohio [no date]), p. 9.

[4]Illinois Conference on Environmental Education, A Proposal for the Development of a Master Plan for Environmental Education for the State of Illinois (Oregon, Illinois: The Conference, 1971), p. i.

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environmental education in Illinois. Thus all the state plans reviewed emphasized the importance of some type of advisory council.

RESTRUCTURING THE CURRICULUM

It is important to note that none of the environmental education plans that were studied considered environmental education as solely a separate course in the curriculum. Also, no plans regard environmental education as limited only to science education. The philosophy that environmental education should be an integral portion of the entire curriculum is perhaps best reflected in a position statement written by Paul Taylor and Clinton L. Brown, science supervisors for the North Carolina Department of Public Instruction. Taylor and Brown state:

> Through our work in environmental education, the Division of Science Education has come to believe that environmental education is education for all. Therefore, it should be established as a planned part of the curriculum in all schools. It affects all citizens in the community.
>
> Development of environmental awareness is a process which is evolutionary in nature and, therefore, involves a continual input into the individual's conception of his surroundings. This implies that any approach taken to environmental education must begin at the earliest possible time in the learner's life and continue throughout his years of formal education and beyond.
>
> Environmental problems are social, scientific and economic in nature and therefore, must be dealt with through all disciplines in the curriculum with each discipline making its own unique contributions. This implies that emphasis should be given to environmental education at all levels through all disciplines. However, an alternative approach, that of the inclusion of a

> special course at a specific grade level, should not be ruled out altogether.[5]

The writers of the Alaska plan for environmental education call for increasing the child's awareness of environmental problems and appreciation of nature through a curriculum which allows the student to become physically involved with many areas of his local environment.[6] Likewise, Delaware's planners call for a multi-disciplinary problem solving approach through environmental education experiences. Oregon writers put environmental education into perspective as it relates to existing courses with the following statement:

> Program and Curriculum Development, Objectives: To improve the learning of basic skills (reading, writing, arithmetic) [emphasis theirs] by providing experiences that allow for application of those skills to the total environment.[7]

All of the other environmental education plans that were studied had similar statements regarding the relationship of environmental education to existing courses.

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[5]Paul Taylor and Clinton L. Brown, Environmental Education Progress Report, January 1969-March 1973 (Raleigh, N.C.: North Carolina Department of Public Instruction [no date]), p. 5.

[6]Alaska State Plan for Environmental Education, Second Draft (Juneau, Alaska [no date]), p. 5.

[7]A Proposed Plan of Environmental Education for the State of Oregon (Salem, Oregon: Department of Public Instruction, 1970), p. 4. (Photocopy.)

PRE- AND IN-SERVICE PROGRAMS

A third point which is common to the plans for environmental education which were examined is the need for teacher education as it relates to environmental education. This need was stated in various ways and was not always elaborated on beyond a simple statement that the need for pre- or in-service education programs in environmental education exist. The environmental education plan for New Jersey has a statement that at the present time education majors at Glassboro State College and Trenton State College participate in a week-long environmental education program at the New Jersey State School of Conservation in Branchville. It goes on to report:

> In addition, during their junior year practicum experience, Glassboro students are given the opportunity to work with and observe youngsters at the Conservation and Environmental Science Center at Brown's Mills.[8]

The Delaware plan for environmental education includes descriptions of two courses which are now being taught within the state that deal specifically with environmental education. In one of these courses emphasis is placed on teaching materials for environmental education. The description of this course is:

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[8]The New Jersey State Council for Environmental Education, Master Plan for Environmental Education: A Proposal for New Jersey (Mountain Lakes, N.J.: The Council [no date]), p. 19.

> Ed 680, Population-Environment Education (3)
> This course includes familiarization with the conceptual scheme for population-environment education developed at the University of Delaware. Teaching materials and methods for the attainment of concepts and skills are introduced. Teachers are encouraged to specialize in materials for their grade levels and subject areas within the general scheme. This course is offered in Newark and in Dover.[9]

The other environmental education course in Delaware is one which presents an overview of current environmental problems. The Delaware environmental education planners also propose that short courses in the following areas be developed for teachers and non-educational personnel:

> Coastal zone ecology
> Freshwater ecology
> Forest ecology
> Urban problems
> Regional planning
> Environmental monitoring
> Pollution problems
> Pesticides-environmental interaction
> Environmental law[10]

While the Ohio environmental education plan does not list specific courses in environmental education for teachers it does contain the recommendation that:

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[9]Delaware Conservation Education Association, Inc., p. 21.

[10]Ibid., p. 23.

> Certification requirements for all new teachers to include a minimum of 3 semester hours of instruction in conservation of natural resources, outdoor education methods and environmental problems.[11]

Ohio's planners also recommend that there be in-service and graduate programs made available for teachers who are seeking advanced teaching certificates or recertification. The planners do not specifically state if these in-service and graduate programs would be required, or just available on an optional basis for those teachers who wish to enroll in them.

The New Jersey planners point out that three of the state colleges in New Jersey--Glassboro, Trenton and Montclair--now have graduate programs that are designed to assist teachers in becoming environmental education specialists. These programs lead to a masters degree in environmental education. The programs were begun with federal funds under the provisions of the Education Professions Development Act, but are now operating without federal funds. At the time the New Jersey environmental education plan was written there were approximately seventy students enrolled in the program at the three state institutions.[12]

In North Carolina's plan it is reported that there is a lack of

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[11]"Ohio Environmental Education Plan," p. 31.

[12]The New Jersey State Council for Environmental Education, p. 19.

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pre-service teacher education in environmental education methodology. The writers of the North Carolina plan point out that there are some programs that offer specialized information concerning environmental problems that would be of use to teachers, but that these courses are often too specialized and hence are of little use to the generalist teacher.[13] Like Ohio, North Carolina's plan contains a recommendation that teachers should be required to have three hours of course work that deals with the environment and natural resources and that secondary education majors be offered an interdisciplinary environmental course in place of one of the current science electives.[14] However, unlike Ohio's plan, the planners in North Carolina do not make any recommendation dealing with teacher education that deals with the methodology of presenting environmental issues in the classroom.

The other state plans that were examined also made mention that there should be some pre- and in-service education programs for teachers. These plans, from Alaska, Maryland, Oregon and Washington did not contain specific recommendations concerning how teacher education should be accomplished.

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[13] A Report to the North Carolina General Assembly, Environmental Education (Raleigh, N.C.: North Carolina Department of Public Instruction, 1970), p. 85.

[14] Ibid., p. 88.

ENVIRONMENTAL EDUCATION SUPERVISORS

The fourth, and final, point that was common to all of the state environmental education plans that were reviewed was the employment of an environmental education supervisor within the state's department of public instruction. When stated, the duties of the environmental education supervisor as perceived by the writers of the state plans for environmental education are quite similar.

As an example, the description of the duties of the environmental education specialist for Alaska states:

> Consult with school administrations and staffs concerning environmental education programs and coordinate programs presently existing in the state.
>
> Assist school personnel in setting up new programs, evaluating these programs, and suggesting modifications and improvements.
>
> Work with personnel in Alaska universities and the Department of Education to supervise the development of educational guides.
>
> Conduct workshops at the request of Alaska school administrators.
>
> Serve as resource to State Advisory Committee on Environmental Education.[15]

However, the writers of environmental education plans for several of the states did not include a description of the duties of the environmental education supervisor. This omission may be partly explained by the fact that most of the states with plans for

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[15] Alaska State Plan for Environmental Education, p. 21.

environmental education now have environmental education supervisors. It is unknown if the supervisor was hired before or after the plan was written in some states.

In December 1973 the Educational Resources Information Center for Science, Mathematics and Environmental Education (ERIC/SMEAC) published a mailing list which showed that twenty-one states have an environmental education supervisor. This includes all the states that have environmental education plans which have been reviewed here with the exception of Oregon. In addition to the twenty-one states with environmental education supervisors, all other state departments of public instruction have designated a person who has the primary responsibility in some other area and the additional responsibility of environmental education supervisor. The person who has been given this additional responsibility varies from state to state, but most commonly it is the science supervisor. In one state the assistant superintendent of instruction has the additional responsibility of environmental education supervisor, while in a few others it is a person primarily responsible for overseeing federal programs.[16]

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[16]Educational Resources Information Center for Science, Mathematics and Environmental Education, "List of State Environmental Education Supervisors" (Columbus, Ohio: ERIC/SMEAC, 1973). (Photocopy.)

OTHER RECOMMENDATIONS

The environmental education plans for each state have additional recommendations beyond the four which have been discussed above. However, the recommendations that are discussed below are not common to all the environmental education plans that were studied.

Regional Centers

The environmental education planners for Alaska, Maryland, North Carolina, Ohio and Oregon each recommended that regional environmental education centers be established. The recommendations indicate that the centers would serve as teacher education facilities and student resident centers in each of the states named above.

The Ohio environmental education planners recommend that regional centers be established in conjunction with five of the state universities: Ohio State, Kent State, Bowling Green, Ohio University and Miami University. This would establish a regional center in the central portion of the state as well as one near each corner of the state. As an alternative to this the planners suggest that the centers be located in state parks near each corner of the state as well as in a centrally located park. However, the writers of the Ohio plan are careful to point out that the state universities presently have the

facilities and staff for conducting in-service workshops, demonstration resident programs, conducting conferences and providing facilities for storing and disseminating information. These are functions that the planners perceive as the responsibility of the staff at the regional environmental education centers.[17]

Oregon's planners, on the other hand, included a list of Job Corps centers in Oregon. It is hoped by the Oregon environmental education planners that at least some of the Job Corps centers, especially two that are now closed, may be converted to regional environmental education centers. This would take advantage of facilities that now exist and are designed to hold approximately one hundred to two hundred students.[18]

The other plans which mention the establishment of regional environmental education centers do not include specific statements concerning the location of the center. However, the planners do point out that insofar as possible the centers should represent different geographical regions of the state.

In the New Jersey environmental education plan it is stated that there are now four regional resident centers for environmental education which were created through Title III ESEA funds. Two of

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[17]"Ohio Environmental Education Plan," p. 25.

[18]A Proposed Plan of Environmental Education for the State of Oregon, p. A-1.

these centers have resident programs, while the other two are for day use only. They do represent different geographical and ecological regions, with one located in the pine barrens area, one on the ocean, one in the mountains, and the other in the central portion of the state.[19]

Information Dissemination

The planners for four states, Ohio, North Carolina, New Jersey and Alaska, specifically point out that there is currently a great deal of information for teachers that deals with environmental education. They go on to state that this information is not located in one specific place and that no central method of disseminating this information exists.

To solve this problem, the planners in Ohio, New Jersey and Alaska recommend that the dissemination function be related to the proposed regional environmental education centers discussed earlier. The North Carolina task force proposes establishing a clearing house for environmental education within their department of public instruction.

In no plan is it clear how any information would travel from the regional center or clearing house to the classroom teacher.

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[19]The New Jersey State Council for Environmental Education, p. 21.

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There are no specific recommendations such as special newsletters, including synopses of information with regular department of public instruction newsletters, or regular educational television programing as a means for disseminating information.

Curriculum Development

The Ohio environmental education planners indicate that curriculum material that has been developed in conjunction with the Title III ESEA project in the Willoughby-Eastlake schools could be expanded to meet the need for new curriculum material within the state. In contrast to this the planners for Delaware, Maryland, North Carolina and Washington indicate that they feel that the development of curriculum material is important, but do not indicate any available source of curriculum material. However, they all do state that any curricula material that is developed should follow an integrated approach to the curriculum.

North Carolina's task force recommendations go beyond the integrated approach in that they recommend studying the feasibility of replacing the seventh grade science course with an environmental science course and abolishing the present high school biology course and replacing it with an elective course dealing with environmental education in addition to making environmental education an integral

portion of existing courses.[20]

The North Carolina task force also recommends the development of curriculum guides for environmental science which are designed specifically to emphasize the unique points of each geographic region within the state.[21] No other state makes a similar recommendation.

Outdoor Environmental Laboratories

The environmental education plans for Alaska and Maryland are the only ones in which the planners specifically recommend the development of outdoor environmental laboratories on or near schools. Alaska recommends three distinct types of outdoor environmental laboratories: those on school grounds, those around urban and industrial sites, and remote sites representing local ecotypes.[22]

Maryland's plan is quite specific in that in it the planners recommend that outdoor environmental laboratories be a minimum of two acres on elementary school sites and at least five acres on high school sites.[23] This requirement does not make any mention of

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[20] A Report to the North Carolina General Assembly, Environmental Education, p. 95.

[21] Ibid.

[22] Alaska State Plan for Environmental Education, p. 16.

[23] "Report of the Advisory Committee for Environmental Education to the Maryland State Superintendent of Schools" (Annapolis, Maryland [no date]), p. 9.

different types of vegetation, topography and other features that should be considered in developing an outdoor environmental laboratory. As such, a specific size requirement may be too restrictive in some cases.

Mobile Touring Facilities

Oregon's environmental education plan is unique in that the planners who wrote it state: "There is an increase in the number of mobile school classes. Entire classes tour a geographical area for 3-6 weeks to study different parts of our nation's environment."[24] According to the Oregon planners, the regional environmental education centers discussed earlier in this paper could be used for a "base camp" on these trips. Oregon is the only state in which the planners mentioned any type of "mobile touring facility."

It is unclear if the "remote" centers mentioned in the Alaska plan and discussed in the preceding section of this paper are remote in that they are not adjacent to the school but within the community, or if "remote" means that they are in the rural areas of Alaska. If the planners meant that the "remote" areas are in the rural areas, then perhaps they could, and would, be used for extended trips such as the mobile school classes discussed in Oregon's environmental education plan.

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[24] A Proposed Plan of Environmental Education for the State of Oregon, p. 9.

Local Environmental Education Advisory Councils

Local environmental education advisory councils will be established in all school districts or on a regional basis within the states of North Carolina and Alaska if their state environmental education plans are fully implemented. These councils will have the same basic composition and function as the state environmental education councils. However, they would be composed of people representing a smaller geographical area, serve a smaller population area, and therefore the planners expect them to be able to provide more guidance concerning educational approaches to local environmental problems.

Adult Education

New Jersey's planners are the only ones with a specific recommendation dealing with adult education. They recommend that all adults in any education program be required to take one survey course on the problems of the environment.[25] This contradicts the overall approach taken by all planners, including those in New Jersey, who recommend an integrated approach to environmental education for students in grades kindergarten through twelve.

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[25]The New Jersey State Council for Environmental Education, p. 14.

Urban Programs

The New Jersey planners, who live in one of the most densely populated states in this country, stress the need for urban environmental education programs. It is pointed out that few urban environmental education programs now exist, but unfortunately the New Jersey plan does not contain any specific recommendations, other than the need for more effort in this area.[26]

Financing and Priorities

No state planners included any discussion of how much it would cost to implement the goals contained in their environmental education plan. Perhaps this point was not discussed because funding will be determined by the state's legislative body. With the current rate of inflation, deficit spending in some states, and general lack of funds available in many states for new projects, perhaps the planners felt that any estimate of expenses would be difficult at best, and lower than anticipated no matter what was estimated.

However, an item that was apparently overlooked by each group of planners and relates to planning is one of priority. No plan lists its goals in priority order. This means that if partial funding is made available there is no quick reference which can be used to

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[26]The New Jersey State Council for Environmental Education, p. 23.

determine where the planners feel the state's environmental education program should begin, or where the most return for a given expenditure can be obtained. It may be possible to argue that all the goals are equally important, yet in reality, some could be considered more important than others.

Implementation

The majority of the plans, those of Ohio and Oregon are partial exceptions, contain very little information about the steps that must be taken to implement the goals for environmental education which they contain. As an example, in the discussions of curriculum development, statements are found saying that curriculum change is necessary, but there are no statements that indicate how this change should be achieved, or who will be responsible for developing any new curriculum material.

Similarly, while all plans point out the need for pre- and in-service environmental education programs for teachers, no state plan, other than Delaware's, contains any discussion of possible courses to meet this need. While teacher education and curriculum development are the examples used here, implementation procedures are weak in all plans.

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SUMMARY

The plans for environmental education which were reviewed in conjunction with this study all have statements which recommend four major objectives that should be an integral portion of each state's environmental education program. These four common objectives are: 1) the appointment of an advisory council for environmental education, 2) restructuring the curriculum to make environmental education an integral portion of all subjects, 3) pre- and in-service environmental education programs for teachers, and 4) the employment of an environmental education supervisor within the state's department of public instruction.

Beyond these four goals some diversity was found. Additional goals ranged from mobile touring facilities to the need for the development of urban environmental education programs. Also found were goals dealing with information dissemination, outdoor environmental laboratories, local environmental education advisory councils and regional environmental education centers.

The plans were also similar in that they all lacked any mention of finances. Likewise, they all lacked any listing of priorities for implementing the goals that were discussed and few plans dealt with the actual steps involved in implementing the goals found in them.

Chapter 3

OPINIONAIRE

INTRODUCTION

An opinionaire was used to determine what Montana educators, who had exhibited at least slight interest in environmental education, felt should be the major components of a state environmental education plan. The opinionaire was sent to all the participants of the Montana Environmental Education Conference held in Bozeman May 11-12, 1973. This population was selected because of the interest they exhibited in environmental education by attending the conference.

The Montana Department of Public Instruction sent out approximately five hundred invitations to the conference. The invitations went to all school administrators in Montana as well as state and federal employees who were involved with environmental education programs.

Sixty-three individuals attended the conference and all received the opinionaire within ten days after the conference. Of these, 84 percent, or fifty-three people, returned a completed opinionaire.

The conference participants' knowledge of environmental education went from one extreme to the other. Some participants had been involved in environmental education activities for several years, while others came to learn. At the outset of the conference some participants admitted that they had no idea what environmental education consisted of, but they wanted to learn if environmental education programs would be a worthwhile addition to their school's curriculum.

Because this group represented a cross section of school and governmental agency personnel, and by the time the conference ended all at least appeared to understand what was meant by the term environmental education, they were selected to receive the opinionaire that was used to determine what goals for environmental education should be included in this plan. While this sample is biased in that everyone surveyed had at least a limited knowledge of environmental education, it is believed that the plan developed here has more input from a cross section of school personnel than the majority of the plans that were reviewed from other states.

The review of environmental education plans that has been detailed in Chapter 2 revealed that all of the plans were developed by some special interest group concerned with environmental education. In no plan was there any indication of the use of an opinionaire, questionnaire or other survey instrument to assist in determining what goals or objectives the school personnel or other segments of

the population considered important in an environmental education plan.

The Delaware environmental education plan was written by the Delaware Conservation Education Association. The plans for Oregon, Maryland and New Jersey were written by the members of the environmental or conservation education advisory council in each of those states. The plan for North Carolina's environmental education program was written by a task force which was appointed by the state board of education and the superintendent of public instruction under the direction of the general assembly. Of the groups in these states, the New Jersey State Council for Environmental Education appears to be unique. This is the only advisory group that appears to have a full-time professional staff. This staff was responsible for writing the New Jersey environmental education plan.

The environmental education plans for Washington, Alaska and Ohio give no specific indication of who wrote each plan. The Ohio plan does contain a list of members of the Advisory Committee on Environmental Education[1] and the "Environmental Education Task Force Committee."[2] The Environmental Education Task Force membership consists entirely of people employed by the Ohio

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[1] "Ohio Environmental Education Plan," p. 38.

[2] Ibid., p. 40.

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Department of Public Instruction, while the Advisory Committee on Environmental Education has members who represent schools, PTA's, and industry. However, how much input each of these groups had in developing the environmental education plan for Ohio could not be determined. At the time the Ohio environmental education plan was written, there was a full-time environmental education supervisor employed in the Ohio Department of Public Instruction.

Like Ohio, Washington and Alaska also had full-time environmental education supervisors employed by the Superintendent of Public Instruction at the time the environmental education plans were written in those states. However, there is no statement in either of these plans concerning who, or what committee, was responsible for writing the environmental education plan for Washington or Alaska.

The remainder of this chapter contains the responses to the opinionaire which was sent to the conference participants. It also contains a discussion of additional sources of information that were utilized. Chapter 4 contains an interpretation of the responses to the opinionaire.

OPINIONAIRE RESULTS

Question one: Do you believe that environmental education in Montana's public schools should be emphasized in grades: ___1-4,

___5-8, ___9-12, ___All of the above. Ninety-one percent of the respondents indicated that they felt environmental education should be in all grades.

Question two: Do you believe environmental education in Montana's public schools should be treated as: ___A separate subject, ___A portion of all subjects, ___A portion of some existing subjects, ___Other. The responses showed that 69 percent favored environmental education as a portion of all subjects, while 6 percent favored it as a separate subject with another 2 percent marking "other" and 21 percent expressing a preference for having environmental education a portion of some existing subjects.

Question three was: Should teachers be expected to discuss local environmental problems: ___Yes, ___No, ___No opinion. Ninety-eight percent of the responses said yes, 2 percent said no.

Question four was: While discussing local environmental problems, should teachers speak against those environmental practices that are considered by the teacher to be detrimental to the community: ___Yes, ___No, ___No opinion. The responses showed 72 percent responding "Yes," 24 percent with a negative response, and 5 percent having no opinion.

Question five: List in order of priority how should the teacher present a balance of both sides of an environmental issue: ___Calling in outside speakers, ___Based on the teacher's own

reading, ___There is no need to present both sides, ___Students defending what the teacher is against, ___Other. The responses to this question are shown in Table 1.

Table 1

Responses Received to Question Five

Response	Rank				
	1	2	3	4	5
	(percentages)				
Outside speakers	75	24	16		
Teacher's reading	21	43	39	25	13
No need		3	5	45	75
Students' defense	4	30	39	30	12

The sixth question was: As one portion of an environmental education program, should students be required to circulate petitions concerning local environmental problems or attend public hearings on environmental issues as a class activity? ___Yes, ___No, ___No opinion. However, some individuals read this as two questions. The first question being: As one portion of an environmental education program should students be required to circulate petitions concerning local environmental problems? ___Yes, ___No, ___No opinion. The second question was then: As one portion of an environmental education

program should students be required to attend public hearings on an environmental issue? ___Yes, ___No, ___No opinion.

Taking the question in its entirety, 31 percent of the respondents favored the proposal while 40 percent opposed it and 6 percent had no opinion. However, another 24 percent of the respondents divided the question as shown above, and all of these were in favor of having students attend public hearings but were opposed to having students circulate petitions.

Question seven: As a portion of their science classes, should students be expected to do research such as air or water quality monitoring in their community? ___Yes, ___No, ___No opinion. Ninety-two percent of the respondents favored this, 4 percent were opposed and 4 percent had no opinion.

The eighth question asked: How should the results of an environmental monitoring activity carried out by students be made public? ___Released to the newspaper, radio or television; ___Presented at a city or county council meeting; ___Turned over to the local, or state, pollution control agency; ___The findings should not be made public; ___Other. The responses were 32 percent in favor of releasing the information to the press, 16 percent in favor of releasing the information at a city council meeting, 31 percent giving the information to a pollution control agency, 5 percent not making the findings public, and 16 percent indicating "other."

Question nine: Should in-service programs in environmental education be conducted through: ___Department of Public Instruction, ___The University System, ___Local people aware of local problems, ___U.S. Forest Service, ___Other agencies, ___A combination of the above. The responses showed 11 percent favoring in-service programs conducted through the Department of Public Instruction, 14 percent favoring them conducted through the University System, 2 percent favoring them done by local people aware of local problems, and 40 percent in favor of a combination of some of the above named agencies. In addition, 33 percent of the responses indicated that the workshops should be conducted by all of the above named groups.

The tenth question was: Do you believe there now are adequate pre-service environmental education programs for potential teachers in Montana? ___Yes, ___No, ___No opinion. The responses showed that 6 percent feel there is an adequate program while 85 percent do not believe there is one, and 10 percent had no opinion.

Question eleven asked: If you feel there is an adequate pre-service program, please identify the institution and courses that make up the program. Two respondents indicated that they felt the program at Eastern Montana College was adequate, while one indicated the University of Montana's program was adequate. One felt that Montana School of Mines had an adequate summer program for teachers.

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Question twelve asked: Should any or all potential teachers have a course in environmental education? ___All potential teachers, ___Teachers who will teach in selected subjects. The responses showed that 94 percent favored a course for all potential teachers while 6 percent favored such a course for teachers in selected subjects.

Question thirteen: Do you believe the Department of Public Instruction should hire an environmental education coordinator? ___Yes, ___No, ___No opinion. Eighty-seven percent of the responses were affirmative, 6 percent negative and 7 percent had no opinion.

Question fourteen: If the Department of Public Instruction hires an environmental education coordinator, what should be his three primary duties? a.___, b.___, c.___. The top three items listed here were: a. Dissemination of ideas, information and serving as a clearing house with forty-one people suggesting this; b. Conducting pre- and in-service programs with thirty suggesting this; and c. The coordination of existing environmental education programs in Montana with twenty-one recommending this.

The fifteenth question was: Should there be one state-adopted environmental education program or several recommended programs for local school districts to pick from? ___One program, ___Several programs, ___Only locally developed programs, ___No opinion.

Eighteen percent of the responses were in favor of having one program, 64 percent favored having several programs, 16 percent only locally developed programs, and 2 percent of the respondents had no opinion.

Question sixteen: List in order of priority who should be responsible for developing any approved environmental education curriculum: ___Students, ___Teachers for the appropriate grades, ___Department of Public Instruction personnel, ___University instructors from the appropriate areas, ___Personnel from other state, federal, or environmental groups, ___Other. The responses to this question are shown in Table 2.

Table 2

Responses Received to Question Sixteen

Response	Rank				
	1	2	3	4	5
	(percentages)				
Students	5	28	23	19	38
Teachers	48	23	15	3	
DPI	21	13	26	25	15
University	18	23	21	22	7
Other agencies	8	15	15	31	38

Question seventeen: Do you believe environmental education can be taught effectively in the typical classroom? ___Yes, ___No, ___No opinion. The responses showed 67 percent thought the typical classroom could be used effectively, 28 percent thought it could not, with 4 percent having no opinion.

Question eighteen asked: What type of classroom structure do you feel is most conducive to environmental education programs? ___Traditional, ___Open, ___Other. Eight percent of the responses felt the traditional classroom is the most conducive to environmental education programs. Fifty-six percent indicated they felt open classrooms are the most conducive to environmental education programs, with 36 percent indicating "other." Many of the respondents who checked "other" wrote in "outdoor classrooms."

Question nineteen was: What type of teaching structure do you believe is most conducive to carrying out environmental education programs? ___One teacher for all subjects (typical elementary classroom), ___Team teaching, ___Departmentalization, ___Other. The responses to this were 12 percent in favor of one teacher for all subjects, 57 percent favoring team teaching, 14 percent favoring departmentalization and 16 percent indicating "other."

Question twenty: Should all new schools be required to set aside land for an outdoor classroom? ___Yes, ___No, ___No opinion. This proposal was favored by 68 percent with 28 percent opposed to it

and 4 percent having no opinion.

Question twenty-one asked: Should the Department of Public Instruction provide a facility where local school districts can conduct resident (overnight) environmental education programs? ___Yes, ___No, ___No opinion. The resident facility was favored by 54 percent, opposed by 35 percent while 10 percent had no opinion.

The twenty-second question was: If the Department of Public Instruction provides a resident facility should they also provide the staff at such a facility? ___Yes, ___No, ___No opinion. The responses to this question indicated 55 percent favored Department of Public Instruction staffing while 27 percent were opposed to such a staff and 18 percent had no opinion.

Question twenty-three was: Should environmental education be a portion of all, or of some, adult education courses? ___All, ___Some, ___No opinion. Responses to this showed 42 percent favoring all classes having an environmental education component, with 53 percent feeling that some classes should have this and 5 percent having no opinion.

Question twenty-four: Please list the following topics in order of importance in implementing a statewide environmental education program through the Department of Public Instruction: ___Encouraging the University to offer pre-service courses in environmental education, ___Conducting in-service programs, ___Having a

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full-time environmental education coordinator in the Department of Public Instruction, ___Establishing outdoor laboratories on school sites, ___Establishing a resident center, ___Developing curriculum material, ___Other. The results of this question are found in Table 3.

Table 3

Responses Received to Question Twenty-four

Response	Rank					
	1	2	3	4	5	6
	(percentages)					
Pre-service	16	18	26	27	13	4
In-service	21	28	28	20		2
Full-time supervisor	50	9	2	11	17	11
Establishing outdoor laboratories	6	13	14	16	34	17
Establishing resident center		3	5	8	20	57
Develop curriculum	6	28	25	18	15	9

Question twenty-five was: What agency or group do you believe is now doing the most to promote environmental education in the public schools? ___Department of Public Instruction, ___University system, ___U.S. Forest Service, ___National Park Service,

___Garden clubs, ___Soil Conservation Service, ___Other, ___Individual school districts, ___Montana Fish and Game Department. The responses to this were 2 percent indicating that the Department of Public Instruction was doing the most, 24 percent the University system, 21 percent the U.S. Forest Service, 7 percent the National Park Service, 1 percent the garden clubs, 4 percent Soil Conservation Service, 13 percent "other," 21 percent individual school districts, and 7 percent the Montana Fish and Game Department.

Question twenty-six asked the respondent to elaborate on the following question: Do you feel there is fragmentation in the effort to produce an environmentally literate population, and how can this fragmentation be reduced? Breaking the first half of this question into a yes or no component shows that 93 percent of the respondents feel there is now fragmentation in the effort to produce an environmentally literate population, while 6 percent feel no such fragmentation exists. The majority of the suggestions of ways to end the fragmentation centered around the formation of some form of environmental education council. Several responses also indicated that some fragmentation will always exist because of differing local conditions, but that effective communications could help reduce this fragmentation.

The twenty-seventh question asked the respondent to elaborate on the question: Should environmental educat on attempt to change values and life styles? Seventy-nine percent of the respondents

answered yes to this, 15 percent said no, and 6 percent said we should teach students to think for themselves.

ADDITIONAL SOURCES OF INFORMATION

In addition to the questionnaires, interviews were carried out with fourteen individuals. Persons were selected to be interviewed by their expressed commitment to environmental education, or through the position they held in a government agency. Those interviewed included the directors of the three major environmental education projects in Montana as well as personnel in the Fish and Game Department, Forest Service, National Park Service, and employees in the Department of Public Instruction as well as others.

These interviews were conducted in the fall of 1973, after the results of the opinionaire had been tabulated. This made it possible to discuss the responses and go into detail where a person's opinion was the same as the majority of the responses, or to allow a person to elaborate on responses that were not in keeping with the responses of the majority. A summary of each interview is found in Appendix F.

Following the Bozeman Environmental Education Conference, an ad hoc committee for environmental education was formed. This committee was made up of volunteers who felt that they had the time to meet approximately once per month to work on ways of strengthening environmental education activities in Montana. At meetings in

August, September, October and December various segments of this plan were presented and discussed to determine their feasibility and practicality. This committee is made up of Forest Service personnel, school teachers, school administrators, university personnel, Department of Public Instruction personnel and university students. The outcome of the discussions relating to this plan have been incorporated in the interpretation of the responses found in Chapter 4.

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Chapter 4

INTERPRETATION OF THE RESPONSES

The preceding section contained a description of the responses to the opinionaire with no attempt to analyze their meaning. This section will examine the responses as they relate to common points. This information will be used to determine a set of goals for implementing any environmental education program in Montana.

SUBJECT AND GRADE LEVELS

The responses to the first five questions indicate that there is a consensus desiring environmental education as a portion of all subjects in all grade levels. It also shows that the environmental education program should include topics of local concern. As these topics are incorporated into the curriculum, the responses show that the teachers should rely not only on their own reading and experiences, but also obtain assistance from outside speakers in presenting opposite viewpoints. In addition, the teacher should try other techniques, such as student debates, to present both sides of an issue.

The responses to the next three questions indicate a general belief that science classes should become involved in monitoring air or

water quality in the community. A few replies indicated that care must be taken to insure that standard methods are used, or that the health department check the findings for accuracy. These appear to be a necessary precaution to maintain credibility, especially since the majority of the respondents felt that the findings of the students should be made public.

There was less agreement concerning the involvement of social studies classes in environmental activities. As indicated in Chapter 3, the majority of the respondents were opposed to having students circulate petitions as a required activity. However, some of those who responded negatively to this question did indicate that if the students took the initiative, or started petitions because they wanted to (as opposed to the teacher's requiring such an activity), it would be acceptable. Also, as was pointed out in Chapter 3, some respondents split this question into two parts, and a majority were in favor of students attending public hearings on environmental issues. No matter how these activities are carried out, the opinions expressed by the respondents made it clear that students must feel free to express their own beliefs rather than being forced to accept those of their teachers.

The responses to this group of questions are combined to form the following goal for implementing environmental education in Montana: the existing curriculum for all students must be restructured

at all levels to insure that it includes environmental awareness and understanding in all subject areas, rather than total reliance on establishing new courses dealing specifically with specific environmental problems.

TEACHER TRAINING

The responses to the portion of the opinionaire dealing with teacher training indicates that all teachers should be prepared to incorporate environmental education into all aspects of the existing curriculum. This could be considered as reconfirmation of the first goal. However, there was strong agreement that this training is not now available for the vast majority of the education majors in Montana. If teachers are going to be expected to incorporate environmental understandings into their subject areas, courses to prepare them for this must become an integral portion of their undergraduate training.

It was also indicated that in-service programs dealing with environmental education should not be the sole responsibility of one agency, but rather a combined effort of the several agencies that are now involved with some aspect of environmental education. As with the pre-service training, the in-service programs should be designed to show all teachers how to combine the teaching of environmental awareness and problems with their areas of specialization. Both the pre- and in-service training programs should provide teachers with,

among other things, a way to deal with those environmental problems that are of concern to Montana.

Interviews that were conducted in conjunction with the opinionaire showed a belief that in addition to teacher education courses in environmental education for all teachers, there should be a minor in environmental education for those potential teachers who wish to develop more expertise in environmental education methodology, and who may find employment as a coordinator for a school's environmental education program.

These responses lead to the formulation of two goals for environmental education that are related to teacher education. The first is: development and implementation of pre- and in-service training programs for all educators in Montana. The second goal relating to teacher education is: establishment of a minor in environmental education at all state-supported teacher preparation institutes in Montana.

ENVIRONMENTAL EDUCATION SUPERVISOR

The results of the opinionaire showed a great deal of support for the hiring of a full-time environmental education supervisor by the Department of Public Instruction. This person should, according to the responses, be responsible for insuring that information of use to teachers be disseminated through his office, and work with in-service programs. If the results of the opinionaire are to be followed,

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his work with in-service programs should be to coordinate and arrange programs with other agencies, rather than to conduct a program entirely from the Department of Public Instruction.

A more detailed breakdown of the responsibilities of a full-time environmental education supervisor shows that educators in Montana would like the person with this responsibility to:

1. Establish a state clearing house for the dissemination of information, ideas, material, methods of funding and model programs that would be of use to teachers and administrators involved with, or planning, environmental education programs.

2. Coordinate (with other state and federal agencies) in-service environmental education programs for all teachers.

3. Coordinate and assist with the evaluation of existing environmental education programs in Montana.

4. Assist with the development or implementation of environmental education curriculum material.

The respondents indicated that there should be several curriculum programs dealing with environmental education available for school use, and that these programs should be developed primarily by teachers. However, further on in the opinionaire the need for developing curriculum materials rated low in terms of priority. This indicates a general feeling, which was also expressed in the interviews, that there is now a great deal of curriculum material for

environmental education. The interviews did uncover the belief that much of this existing curriculum material is unknown or non-available for teachers. As such, no recommendation regarding the development of curriculum material is made, but the need for disseminating information about the existing curriculum material by a supervisor of environmental education should serve to reemphasize the need for a goal which calls for the hiring of a full-time environmental education supervisor in the Department of Public Instruction.

FACILITIES FOR ENVIRONMENTAL EDUCATION

The opinionaire asked about teaching methodology and facilities for environmental education. The respondents' replies indicate that effective teaching can be accomplished in the traditional classroom, especially if there is an outdoor laboratory for environmental education that is also available for use. However, the respondents also believed that more effective environmental education lessons could be accomplished with the open classroom concept than in the traditional classroom structure.

In conjunction with the open-classroom concept is the feeling which was expressed in responses indicating that team teaching is most conducive to the effective presentation of environmental education lessons. These factors--the desire for outdoor laboratories, team teaching and open classrooms--should be considered in the planning of

any new school. However, as was stated previously, the responses indicated that even traditional classrooms would be enhanced if they had access to an outdoor environmental education laboratory. This then leads to the following goal: the Department of Public Instruction should require all new schools to designate an area of land within walking distance of the school for an outdoor environmental education laboratory.

A slight majority of the respondents favored the development of an environmental education resident center which would be staffed by personnel from the Department of Public Instruction. However, this ranked extremely low in terms of priority. Therefore, no specific recommendation or goal is stated here concerning a resident environmental education program.

ADVISORY COUNCIL

The respondents indicated that they feel there is a great deal of fragmentation in the attempt to develop a strong environmental education program in Montana's public schools. However, the responses showed little agreement concerning which group or agency is doing the most to promote environmental education.

The interviews indicated that an advisory council for environmental education should be formed in Montana. Discussions were held concerning he form this advisory council should take. While it was

acknowledged by some that the Ohio plan, with its two advisory councils, had some advantages, the general feeling was that the best advisory council for Montana would be one which had members of federal, state and citizen groups making up its membership. This suggests the following goal: the establishment of an interagency and citizens advisory council for environmental education.

This council, if it is to reflect the desires of those interviewed, should have members from the following state and federal agencies:

1. Department of Public Instruction
2. Montana Fish and Game Department
3. U.S. Forest Service Regional Headquarters
4. National Park Service
5. Bureau of Land Management
6. Board of Regents of Higher Education
7. Soil Conservation Service
8. State Health Department
9. Department of Natural Resources
10. Environmental Quality Council
11. Bureau of Indian Affairs
12. Social Rehabilitation Office
13. Social Welfare Office
14. Agriculture Extension Service

as well as representatives from the following nongovernmental

organizations:

1. Institutions of higher education
2. Public school teachers and administrators
3. Parochial school teachers and administrators
4. High school and college student representation
5. Industries in the state (to include representatives of farming, ranching, and tourism)
6. Representatives from civic groups and conservation organizations, i.e., garden clubs, Junior Chamber of Commerce, American Association of University Women, Sierra Club, Wilderness Society, and other similar organizations.

VALUES AND ATTITUDES

The final question on the opinionaire asked if environmental education should attempt to change values and life styles. A large majority of the respondents indicated they felt this should be done. However, the true problem with any effective environmental education program may be: should it be a change agent for our culture, or should it be designed to maintain the status quo? While there is obviously no easy answer to this, nor one that is acceptable to all, it is still necessary to discuss briefly the role that education, and by implication environmental education, plays in changing or maintaining culture. This is a topic that has been discussed extensively by both anthropologists and educators. A summary of both sides of this argument is presented in the following paragraphs.

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Perhaps the best way to begin to answer this question is to arrive at a definition of culture. Edward B. Tylor's definition is widely accepted; culture, according to Tylor, is "that complex whole which includes knowledge, belief, art, morals, law, custom, and many other capabilities and habits acquired by man as a member of society."[1] With this definition of culture in mind we can then look to the writing of Herskovits, another anthropologist, who stated, "any investigation into cultural change must consider its institutional and its psychological aspects."[2] He went on to say that from the institutional point of view cultures should be analyzed in behavioral terms, or the sanctioned forms of conduct gathered into institutions capable of objective description and studies in terms of the variation they show in outer form. While this is being done the psychological approach seeks to understand the interaction between these institutions and the individuals who order their lives in terms of them.[3] From the above it is reasonable to conclude that any change in an educational institutional pattern could result in some change in the culture of the society that we are dealing with.

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[1]E. B. Tylor, Primitive Culture (New York: G. P. Putnam's Sons, 1920), p. 1.

[2]Ralph Linton, ed., The Science of Man in the World of Crisis (New York: Columbia University Press, 1945), p. 157.

[3]Linton, p. 157.

Perhaps, then, the questions really are, do we wish to change our society? And is that one of the purposes of education? Again, the responses to this on the opinionaire indicated that we must change values and attitudes.

Some anthropologists and educators are agreed that this should be a role of education in general. Margaret Mead has stated: "We need from the teacher who has relied on teaching how a tried method can be used on new material, a totally new kind of teaching--a teaching of readiness to use unknown [her emphasis] ways to solve unknown problems."[4] She goes on to say, ". . . we need to teach our students how to think . . . about a problem which is not yet formulated."[5]

In her book Curriculum Development: Theory and Practice Hilda Taba has dealt with this same issue and arrives at the following conclusion:

> It is not beyond reason to suggest that schools can face a double task: to plan a way of life in school designed to foster certain values and character structure, and to see to it that the school curriculum adds to the shaping of this character structure by providing opportunities to explore important values and to examine social institutions and forces in light of their consistency with these values.[6]

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[4]Margaret Mead, The School in American Culture (Cambridge, Mass.: Harvard University Press, 1951), p. 40.

[5]Mead, p. 41.

[6]Hilda Taba, Curriculum Development: Theory and Practice (New York: Harcourt, Brace and World, 1962), p. 66.

Further on she wrote, "To keep abreast of the fast moving social events and rapidly growing knowledge about society and culture, a new role needs to be created among those responsible for setting the pattern for the curriculum."[7]

It appears that a majority of those responding to the opinionaire would agree with Mead, Taba and Herskovits. It is necessary to realize that not everyone feels that education can or should, be a truly viable force in cultural change. Perhaps the anthropologist Leslie A. White has summed this up best in his article "Man's Control Over Civilization: An Anthropocentric Illusion," in which he indicates that he feels man's culture is a result of a cross section of man's entire history. To support his position he quotes Emile Durkheim, who says "Each generation is brought up by the previous generation and it is necessary to reform the latter if it is to improve the one which follows it."[8] Durkheim then added: "Thus education cannot reform itself unless society itself is reformed. And in order to do that we must go to the causes of the malady from which it suffers."[9]

Perhaps a portion of this belief has been expressed by the

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[7]Taba, p. 75.

[8]Emile Durkheim, "Le Sucide," (Paris, 1897), pp. 427-428, cited by Leslie A. White, The Science of Culture, A Study of Man and Civilization (New York: Farrar, Straus and Co., 1949), p. 346.

[9]White, p. 347.

respondents who indicated that they feel environmental education should be a portion of adult education courses, and that in all environmental education activities the teacher should not force his opinion on the students. White's statement has been taken by this writer as a call for more pre-service training, a topic which was discussed earlier.

The environmental education plan that is being developed here is an attempt to do what Taba has mentioned. Hopefully the plan will provide a means of assisting educators in planning to teach about one aspect of the "fast moving social events and rapidly growing knowledge about society and culture."[10]

The opinionaire responses indicated that the people surveyed appeared to be in agreement with Mead and Taba. As such the following goal is proposed: developing in the population a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms.

THE GOALS

To summarize, through the use of the opinionaire, interviews and the Ad Hoc Steering Committee meetings, the following goals have been determined by Montana educators interested in environmental

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[10]Taba, p. 75

education as the key points in implementing a statewide environmental education program in Montana.

Goal I. Establishment of an environmental education coordinating committee. The committee should have members from the following agencies:

1. Department of Public Instruction
2. State Fish and Game Department
3. U.S. Forest Service Regional Headquarters
4. National Park Service
5. Bureau of Land Management
6. Board of Regents of Higher Education
7. Soil Conservation Service
8. State Health Department
9. Department of Natural Resources
10. Environmental Quality Council
11. Bureau of Indian Affairs
12. Social Rehabilitation Office
13. Social Welfare Office
14. Agriculture Extension Service

In addition to members from federal and state agencies there should be members from the following nongovernmental organizations:

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1. Institutions of higher education

2. Public school teachers and administrators

3. High school and college student representation

4. Parochial school teachers and administrators

5. Industries in the state (to include representation of farming, ranching and tourism)

6. Representatives from civic groups and conservation organizations, i.e., garden clubs, JC's, AAUW, Sierra Club, Wilderness Society, and similar organizations.

Goal II. Restructure the existing curriculum for all students in all levels to insure that it includes environmental awareness and understandings in all subject areas, rather than total reliance on establishing new courses dealing specifically with environmental problems.

Goal III. Development and implementation of pre- and in-service training programs for all teachers.

Goal IV. Establishment of a minor in environmental education at all state-supported teacher training institutions, and recognition by the Department of Public Instruction of such a minor.

Goal V. The employment by the Department of Public Instruction of a person with the primary, and full-time, responsibility for environmental education.

Goal VI. The Department of Public Instruction should require all new schools to designate an area of land within walking distance of the school as an outdoor environmental education laboratory.

Goal VII. Development in the population of a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms.

DISCUSSION OF THE GOALS

This section is devoted to a discussion of the goals for environmental education in Montana. It contains more information concerning each goal than has been presented previously in this paper. However, suggestions for implementing each goal will be discussed in detail in the chapter following this one.

Goal I

The first goal, that of forming an advisory council for environmental education, is important if any environmental education program is to reflect the needs of the entire population. If the council is to speak for the general population of the state it must have

representatives from various citizen groups who can speak for their groups and for the interests of the community in general, in relation to environmental education programs. In addition, an advisory council should have members of the federal and state agencies that are now responsible for, or involved in, implementing, disseminating, and funding any aspect of environmental education.

Serious consideration was given to the two-committee structure for advisory councils that is found in the Ohio Environmental Education Plan. In conferences with representatives from state and federal agencies and with teachers, more support was expressed for the one-committee approach. The general consensus that was expressed by those who discussed the merits of both types of council structure was that the two-council structure removes the citizens from the actual decision-making process. In view of the provisions in Montana's new state constitution, the removal of citizens from decision-making processes is considered by many to be a backward step. However, there was agreement that on occasion it might be helpful to establish subcommittees along citizen/agency lines to expedite the activities of the council.

Goal II

Goal II calls for restructuring the curriculum so that environmental awareness and understanding become an integral portion of all

subjects, as opposed to total reliance on the introduction of new courses. Because of the evolution of environmental education from outdoor and conservation education (which was discussed in preceding pages), it is important that Montana Law 75-7509 be examined here. This law states:

> 75-7509. Conservation Education. Instruction in conservation shall be given in all schools. The scope of the conservation education program shall be approved by the board of education upon the recommendations of the superintendent of public instruction and shall include a wide-spread understanding of conservation facts, principles, and attitudes. Such instruction shall not be a specific course but shall be integrated with the instruction in related courses.
>
> In order to complement the instruction in conservation, the separate units of the university system shall make available to all students in a teacher education program basic instruction in conservation education, and shall include instruction in conservation in their community or public service programs.
>
> To further promote conservation education, all districts are encouraged to instruct pupils about the benefits of preserving the forests and the best methods of planting and conserving trees, and by permitting the pupils to assist in planting trees and shrubs on school grounds and elsewhere on Arbor Day.[11]

This law requires that conservation education be an integral portion of the total curriculum. Interviews indicate that this has not been achieved in Montana schools. How, then, can this be accomplished when it has not been accomplished in the past?

In actuality, all the goals are directed toward this exact question, yet one apparent reason that the full intent of Montana Law

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[11] School Laws of Montana Annotated 1971, Dolores Colburg, Supt. of Public Instruction (Indianapolis: The Allen Smith Co., 1971), p. 333.

75-7509 has not been achieved is that a course in conservation education methodology is not now required for all potential teachers. There is a conservation course now required for all elementary education majors at the University of Montana, Eastern Montana College, Northern Montana College, and Montana State College. Western Montana College offers such a course as an elective for all students, and the schools that require the course for elementary education majors do not require it for all secondary majors. This course deals with basic conservation and environmental problems, but does not deal with the methodology required to present them as an integral portion of other subjects.

Eastern Montana College and the University of Montana are the only schools in the University of Montana system that offer courses in the methodology of teaching environmental problems as an integral portion of other existing subjects.

Goal III

Goal III is related to Goal II in that it calls for the development and implementation of pre- and in-service training programs for all teachers to prepare them for incorporating environmental education into their existing lessons. As has been discussed with Goal II, this training is not now available at three of the teacher education

institutions of the University of Montana System. In addition, the courses in environmental education methodology at the University of Montana and Eastern Montana State College are filled to capacity, which precludes some students who desire this training from receiving it.

In addition to pre-service training, there must be an effective method of retraining those teachers who are currently employed in the public schools throughout the state. Without retraining it is unrealistic to anticipate any rapid change in the methods of presenting material in the classroom. Without a change in classroom presentations, it is unlikely that the majority of students will receive lessons with an environmental education component until the majority of the teachers using today's techniques are either replaced or retrained.

Goal IV

Goal IV calls for the establishment of a minor in environmental education at all state-supported teacher training institutions. This minor would be available for those students who, after taking a basic conservation course and an environmental education methodology course, wish to pursue this area further. In addition, it would serve as a training area for people to become qualified to conduct or supervise comprehensive environmental education in a local school district.

Eastern Montana College has proposed a minor in environmental education while the University of Montana began a minor in

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environmental education in the fall of 1973. It is too early to tell with any degree of accuracy how many education majors will graduate with this minor in the next few years. However, several students have expressed interest in this minor.

Goal V

Goal V calls for the employment by the Department of Public Instruction of a person with the full-time, primary responsibility for environmental education. This would provide a specific person upon whom school districts could call for assistance in planning or evaluating environmental education projects. In addition, it would provide a person who would have access to direct communication with the schools and therefore could serve as both an information and dissemination center for material relating to environmental education that is of interest to public school teachers and administrators.

At the present time the people in the Department of Public Instruction working with environmental education are also involved in providing assistance in several other curriculum areas. This prevents them from having sufficient time to accomplish the tasks that need to be accomplished if environmental education is to become a truly integral portion of the curriculum at all grade levels in all schools.

As has been discussed elsewhere, there is a feeling among the people surveyed that there is fragmentation in environmental education. The environmental education supervisor, in cooperation with

the advisory council for environmental education that was called for in Goal I should be able to work to overcome this fragmentation.

Goal VI

Goal VI would require new schools, at the time of construction, to set aside land for use as an outdoor laboratory. Some of the returned opinionaires had comments to the effect that schools now owned sections 16 and 36 in many counties and that this should be sufficient land. This land is invaluable for many long-term environmental education activities, but it is usually not adjacent to, or within walking distance of the school. There should be an outdoor environmental education laboratory within walking distance of the school for the teacher to use to enhance specific portions of lessons. As such the outdoor laboratory that is a portion of a new school need not be elaborate, but it should not be a portion of the playground or parking area. If it is a portion of either of these areas a conflict of uses arises or the outdoor laboratory is not available for use when a teacher wants to use it.

Goal VII

Goal VII calls for establishing a population that has a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms. This is the expected outgrowth of a truly effective statewide environmental education program. As such

it cannot be looked at as one isolated goal, but rather should be considered the final goal which can only be attained if all the preceding goals are obtained.

The diagram on page 110 shows how the goals that are presented in this plan compare with the goals that are outlined in the plans for environmental education from other states. In this comparison it is important to point out that Alaska, Maryland, Ohio and Oregon all call for the development of regional environmental education centers. These would have the capability of housing overnight school environmental education programs. As has been previously stated, this item rated extremely low priority on the opinionaire and as such has not been suggested in this plan.

Delaware, Maryland and Oregon also call for the development of curriculum materials in their plan. This has not been called for in this plan because the people responding to the opinionaire expressed the belief that there is now sufficient curriculum material available for teachers.

Other differences from this plan for environmental education in Montana and the plans for other states are that North Carolina stresses the term "environmental science" and calls for more preservice science education but does not, apparently, call for an interdisciplinary approach. New Jersey's plan calls for special urban

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Montana Goals	Goals of Other States										
	Alaska	Delaware	Maryland	New Jersey	North Carolina	Ohio	Oregon	Washington	Iowa Position Paper	Illinois Position Paper--Proposal for a Master Plan	West Virginia Position Paper
1. Establishment of environmental education coordinating (advisory) committee	X	Exists ½ time	X	Exists in part	X	X	X	X	X		
2. Restructuring curriculum rather than total reliance on new courses	X	X	X	X		X	X	X	X		X
3. Pre- and in-service programs	X	X	X	Exists in part	X	X	X		X		
4. Minor in environmental education at all state supported institutions											
5. Employment of full-time environmental education coordinator	Now has one		X	X	X	X	X	X	X		
6. Outdoor laboratories for all new schools			X						For all schools		
7. Values and attitudes	X					X				X	

environmental education programs, but this does not seem to be necessary in Montana, which does not have the urban population concentration that New Jersey has.

Chapter 5

IMPLEMENTATION

INTRODUCTION

The goals for environmental education in Montana that have been arrived at and discussed in the previous chapters are of no use unless they are implemented. This chapter will discuss what needs to be done for each goal to be implemented. In the case of some goals, more than one method of implementation is proposed. This is done to provide a more flexible method of implementation and is in keeping with the statements in Chapter 1 concerning the fact that plans must provide alternative courses of action to avoid becoming doctrine.

Goal I

The first goal calls for the appointment of an advisory council for environmental education. As was discussed in Chapter 4, such a council would have members from both governmental and nongovernmental organizations active in environmental education. It is felt that this council would have a stronger mandate for action if its members are appointed by the state superintendent of public instruction.

The members of the council from the governmental agencies

should, in most cases, be the Information and Education representative of his agency. This person generally has the most information readily available concerning his agency's environmental education activities as well as areas of planned concentration.

If all civic and industry groups that are interested in the environment and environmental education are represented on the council, the council could become unwieldy. As such, it is recommended that there be no more than ten council members from civic and industry groups at any one time. Each of these persons should, after initial appointments are made, have a three-year term on the council. At the time of initial appointments, one-third of those appointed should serve a one-year term, one-third a two-year term and the remaining persons a full three-year term. As these initial appointments expire all appointments should be for a full three years. This will prevent a complete turnover of the nongovernmental representation in any one year. Also, at the time of appointment of nongovernmental representatives it should be made clear that appointments will not usually be renewed. This will provide the opportunity for new groups to provide input to the council.

The council should have the opportunity to determine the frequency of their meetings. It is anticipated that in the initial stages of implementing an environmental education program in Montana this council may need to have relatively frequent meetings, but once a

program is running smoothly the need for frequent meetings may diminish.

The functions of the advisory council should be:

1. To examine what each agency and group is now doing to promote environmental education and determine what steps can be taken to consolidate and unify various programs in an effort to avoid duplication or fragmentation among those groups now involved with environmental education activities.

2. To review applications for federal funds to insure that they are in accordance with long-range and short-range environmental education activities planned for Montana.

3. To assess the various environmental education programs now under way in Montana schools to determine if any can be adapted to other school districts.

4. To serve as community liaison personnel to inform the general population, especially through the civic groups that are represented, of activities in the Department of Public Instruction, and other agencies, relating to environmental education.

5. To assist with the implementation of new environmental education programs in Montana public schools.

6. To assist the Department of Public Instruction with evaluation of environmental education programs in Montana.

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Goal II

The second goal calls for restructuring the curriculum to include environmental awareness and understandings in all subject and grade levels. This can be accomplished, in part, through more than one method.

All schools in Montana should be encouraged by the Department of Public Instruction to examine all textbooks that are being considered for adoption to insure that they have environmental concepts throughout, as opposed to one chapter on "conservation" or "environmental problems" in the book. The environmental education supervisor and the advisory council should be able to assist the schools that request help with the review of textbooks.

In addition to the purchase of textbooks with an environmental theme, other instructional media, such as films, film strips and overhead transparencies could be reviewed for an environmental education component. Also, locally developed instructional material that may be used in place of textbooks, or any other form of instructional material that may be used in place of textbooks, should include environmental education concepts. Again, assistance in developing such material or examining it for environmental education concepts, may be available from the advisory council or an environmental education consultant in the Department of Public Instruction. Any material that is used should encourage students in the social studies

and science classes to attend public hearings or carry out air or water monitoring activities or similar suggested activities as an integral portion of their class work.

Goal III

The third goal calls for the development and implementation of pre- and in-service training programs for all teachers to prepare them for incorporating environmental education techniques into their existing lessons. The need for pre- and in-service teacher training has been discussed throughout this paper. If Goal III, the accomplishment of such training, is to be realized, both the pre- and in-service training of teachers for environmental education must change considerably from what is found in Montana today.

As a portion of their undergraduate teacher preparation all teacher candidates should have some instruction in how to make environmental education an integral portion of the subjects they expect to teach. This could be accomplished through a required course dealing with methodology of presenting environmental issues in the classroom.

As was stated in Chapter 4, most elementary education majors in Montana are required to have a course in conservation. However, this course as it is now taught deals primarily with facts concerning conservation and environmental issues, and does not deal

with how to present these same issues most effectively in the classroom.

In place of one required course in environmental education methodology, it is felt that teacher preparation would be more effective if a course in environmental education methodology would require concurrent enrollment in the methods course dealing with the students major subject area if he is a secondary education major. It is anticipated that with concurrent enrollment a joint project for both courses would be required that would teach the student how to integrate environmental education into his area of specialization. For those students who are elementary education majors the environmental education methods course could be taken concurrently with any of the elementary methodology courses.

A longer term, and perhaps the best possible method of preparing teachers, would be to insure that there be an environmental education component as a portion of all methods courses. This is definitely a long-term solution in that it might require some changes in the content of current methodology courses and as a result may be dependent upon retraining or replacement of faculty members now involved with methods courses.

In-service programs are also important if environmental education concepts are to be an integral portion of all subjects. While the Department of Public Instruction has taken some steps in this

direction, there is still much that should be done. The success of any program in the schools generally depends on the support of administrators. As such, there should be a series of workshops in environmental education designed for administrators. These programs should be designed to impress upon the administrators the need for environmental education, as well as showing them some basic items their teachers can do with little, or no, additional instruction. The administrators should also be informed as to where and from whom they may receive consultant help in environmental education program planning and in-service teacher training for environmental education. Administrators shall also be kept informed on possible sources of special funds for new programs in environmental education.

Goal IV

The fourth goal calls for the establishment of an environmental education minor at all state-supported teacher preparation institutions in Montana. Such a minor now exists at the University of Montana in elementary and secondary education. A similar minor has been proposed at Eastern Montana College for secondary education majors. The titles of the courses required for such a minor at each institution are attached in Appendix A, page 86.

A minor in environmental education should better prepare those teachers who become involved in leadership positions related to

environmental education. By its very nature the environmental education minor needs few, if any, new courses added to the institutions' curriculum.

Goal V

Goal V calls for the employment by the Department of Public Instruction of a person with the primary and full-time responsibilities for environmental education. At the present time there is no one specific person in the Department of Public Instruction to contact for assistance with environmental education programs.

To have a full-time environmental education supervisor would not require legislation authorizing such a person in the Department of Public Instruction but sufficient funds for the position to be filled must be appropriated. One of the first duties that such a supervisor would be expected to carry out would be the opening of channels of communication with the schools in the state. This could be through a special newsletter or through a special section on a regular basis in an existing newsletter or magazine that is received by all schools.

In conjunction with this, the Environmental Education Supervisor's office should provide a professional library of environmental education material. This would provide ready access to a wide variety of material for review by teachers, administrators and other individuals working to develop curriculum material, or wanting other

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material concerning environmental education programs. This library could also have a direct link with the Education Resources Information Center (ERIC) for Science, Mathematics and Environmental Education at Ohio State University.

Other duties of the Environmental Education Supervisor should include:

1. Coordinating with other state and federal agencies in-service environmental education programs for all teachers.

2. Coordinating and assisting with the evaluation of existing environmental education programs in Montana.

3. Assisting with the development or implementation of environmental education curriculum material.

4. Serving as a liaison between the Superintendent of Public Instruction and the Advisory Council for Environmental Education.

5. Assisting with the development of proposals for federal, or other special, funding for environmental education programs.

6. Assisting with the development of outdoor environmental education laboratories.

The Environmental Education Supervisor may, on occasion, find himself in a position bordering on conflict of interest. His duties include both assisting with obtaining funds and evaluating projects. As such, he should be aware of who else in the state he can call on for assistance with both of these duties to avoid evaluating what he has proposed.

Goal VI

The sixth goal calls for the Department of Public Instruction to require all new schools to set aside land for an outdoor environmental education laboratory on, or adjacent to, the school site. The most effective way to carry this out would be to require an area to be designated as an outdoor laboratory on the plans for each new school. The size of the outdoor laboratory should be dependent on the enrollment of the school as well as the topography and vegetation of the site. Insofar as possible the outdoor laboratory should exhibit and reflect the natural environment found in that geographic area, as opposed to setting up an "artificial" nature area.

The State of Maryland has recommended that elementary schools with an enrollment of five hundred or less have, as a minimum, a two-acre outdoor laboratory with an additional acre added for each one hundred additional students. Maryland also recommends that high schools have five-acre outdoor laboratories with an additional acre added for every two hundred students beyond one thousand.[1] It is recommended that Montana consider establishing similar standards to insure the establishment of outdoor environmental education laboratories at the time a new school is constructed. In

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[1] Report of the Advisory Committee for Environmental Education to the Maryland State Superintendent of Schools (Annapolis, Maryland [no date]), p. 9.

addition, existing schools should be encouraged to designate an area specifically for use as an outdoor laboratory if they have, or can acquire, sufficient land.

The school should provide close access to the site. It is of utmost importance that the area be available during and after the school day for class use. This means that the laboratory must be located in such a position that it will not be used as a playground or endanger students by having them too close to moving vehicles. To accomplish this some school boards may have to consider securing additional acreage when they plan new schools in their communities.

Goal VII

Developing in the population a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms is the seventh goal. The implementation and attainment of this goal can only be accomplished through the attainment of the previously stated goals. To begin to implement this means that the other goals are being implemented and Montana is on its way to a more comprehensive statewide environmental education program than now exists.

Priorities

As was discussed in Chapter 2, other states have not listed priorities for implementing their goals. If partial funding becomes

available to implement some portion of this plan, what goals should be implemented first, or last?

The opinionaire results in Chapter 3 show that the people surveyed rated a full-time environmental education supervisor in the Department of Public Instruction as the top priority item. This was followed by in-service education, pre-service education, the establishment of outdoor environmental laboratories and curriculum development. However, when the goals that have been stated in this paper are examined in terms of practicability of implementation, some changes in the designated priorities are suggested by this writer.

It is almost impossible to believe that one person in the Department of Public Instruction is going to be able to reach all the teachers in Montana and have a significant impact on their teaching style. However, this is what would be necessary if a supervisor of environmental education was expected to implement environmental education programs across the state. It is therefore recommended that the first priority for environmental education be that of implementing Goal III, development of pre- and in-service programs for all teachers and potential teachers.

This writer believes that the second priority should be the implementation of Goal VI, the development of outdoor environmental education laboratories. If teachers do not have access to such laboratories the portion of their undergraduate training that deals with the

utilization of such areas will be poorly utilized. In addition, it will be harder to use any field-oriented environmental education material unless laboratories are available in which to carry out the activities.

The appointment of the advisory council for environmental education and the hiring of an environmental education supervisor should go hand in hand. Each of these goals can be effective without the other being implemented, but together they should have a synergistic force that can accomplish more than either would be able to accomplish alone. To have a supervisor with few programs or teachers to assist is an unrealistic expenditure of funds. For this reason Goals I and V have been placed third in priority behind teacher education and outdoor environmental laboratories by this writer.

A minor in environmental education at all units of the University of Montana System should be the fourth priority. There are now two schools where such a minor is offered and until more elementary and secondary schools begin environmental education programs it appears as though the University of Montana and Eastern Montana College will be able to meet the demand for environmental educators within Montana.

Curriculum restructuring and changing values and attitudes are both an evolutionary process. Curriculum restructuring can begin now, but it will not be fully effective until all curriculum material has been replaced with teaching material that incorporates environmental

education into the existing subject matter. Because Montana school administrators do not have the textbook purchasing power more populous states have, this goal will not be reached quickly unless other states emphasize this goal as a high priority item.

This listing of priorities leaves the seventh goal, that of changing values and attitudes as the item in sixth priority. However, like curriculum restructuring this is an item that is going on to some extent now and will only be accomplished through the attainment of the previous six goals. No special funding for this item, that does not provide funding for one or more of the other goals, appears likely to help in the attainment of this goal.

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Chapter 6

SUMMARY, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER STUDY

SUMMARY

A multi-step process involving participation of educators in Montana has been used to arrive at the goals for environmental education for Montana that are proposed in this study. First, a conference was held to discuss environmental education. School administrators, university and college personnel, governmental agency personnel and representatives from the Department of Public Instruction were invited to the conference. Discussions at the conference centered on all aspects of environmental education in both concrete and abstract terms. Following the conference an opinionaire was sent to all the participants. This opinionaire was tabulated and the results are reflected in the goals which are stated below.

After the opinionaires were tabulated, but before the goals were finalized, two additional procedures were conducted. First, interviews were conducted with school personnel, governmental personnel and Department of Education personnel to provide in depth discussions on responses indicated on the opinionaire. Also, all the goals were discussed at meetings of the Montana Ad Hoc Committee

for Environmental Education. After the goals were tentatively finalized, they were sent to all the participants at the conference. The sections of this study dealing with the goals and implementation were also made available to them. There were no objections raised concerning the goals as they had been tentatively proposed.

In addition to the public participation, plans for and position statements concerning environmental education in thirteen other states were analyzed. This analysis was conducted to insure that no point which several other states thought important was neglected in this plan.

As a result of this process the following goals for a successful environmental education program in Montana were formulated:

1. The formation of an advisory council for environmental education.

2. Restructuring the curriculum so that environmental awareness and understandings become an integral portion of all subjects, as opposed to total reliance on the introduction of new courses.

3. Development and implementation of pre- and in-service training programs for all teachers to prepare them to incorporate environmental education into their existing lessons.

4. The establishment of a minor in environmental education at all state-supported teacher training institutions.

5. The employment by the Department of Public Instruction of a person with the full-time primary responsibility for environmental education.

6. A requirement that new schools set aside land for an outdoor environmental education laboratory at the time of construction.

7. Establishment in the citizens of Montana a set of values and attitudes that reflects a desire to maintain or improve environments for all organisms.

Throughout the process of developing this plan an attempt has been made to involve as many people as possible who are concerned with environmental education. This has been done on the assumption that if more people are involved in the development, then it should be easier to implement the plan. The last section of this study deals with ways of implementing the proposed goals. Some of the methods that are required for implementation require legislative action, while others can be carried out without waiting for any type of legislation to be enacted.

IMPLICATIONS

As with all plans, the fate of this one rests with the population involved. Because of the number of people involved in determining the goals of this plan, and the fact that they have had a chance to

respond to the goals and implementation procedure and did so favorably, it is hoped they will now begin to implement this plan. It must be remembered that the goals cannot be implemented overnight, and that much work will be involved. The advisory council will have to be established, the Department of Public Instruction will need to hire a full-time environmental education specialist or assign that responsibility to a current staff member, and the university system will need to increase its course offerings in environmental education methodology. Also, curriculum changes will need to be made, and outdoor laboratories planned with the construction of new schools.

Of course some of these events might occur without reference to this, or any other, plan. However, if a statewide environmental education program is to be achieved without a great deal of duplication between various governmental agencies and citizen groups, some plan must be followed.

If there is no ready commitment by the Department of Public Instruction to accept this plan, or any other plan promoting environmental education in the public schools of Montana, then it becomes incumbent upon the Ad Hoc Committee for Environmental Education, or any other citizens' group, to urge the legislature to do all in its power to insure that a comprehensive environmental education program is made available to Montana students. This document can perhaps be used to show legislators that an organized approach does exist for

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implementing environmental education in schools in Montana.

RECOMMENDATIONS FOR ADDITIONAL GOALS

Throughout this study objectivity has been maintained in evaluating the opinionaire and state environmental education plans. In the following paragraphs I will discuss three possible goals for environmental education in Montana that are not supported by the results of the opinionaire or accepted by members of the Ad Hoc Environmental Education Steering Committee, but which I believe would greatly enhance environmental education in Montana. These goals are:

1. The establishment of at least three environmental education resident centers.

2. The establishment of at least one mobile environmental education resident center.

3. The use of educational television for environmental education.

Resident Centers

I feel that it is unfortunate that the establishment of resident environmental education centers ranked extremely low on the opinionaire. I feel that the establishment of at least three resident centers could serve as unifying locations for environmental education programs. The centers should be located so that each represents a distinct

ecosystem within Montana. One should be located in the mountains, one in the prairie and one in an urban area of the state.

All three resident centers should serve a multipurpose role. They could serve as environmental education centers for students, teacher education centers for environmental education, and regional environmental education information dissemination centers.

The resident centers should have a full-time staff. The primary duties of the staff would be to coordinate the resident program activities with topics the teacher has been discussing in the classroom prior to the visit at the center. The lessons at the center should be conducted by the child's regular classroom teacher to provide as much continuity as possible in the child's education. This would also provide the teacher with a firsthand environmental education teaching situation and the opportunity for immediate critique from a staff member. In order to prepare the teachers for their class visit to the resident center, the staff would be expected to conduct teacher education sessions approximately every eight or ten weeks. These workshops should be designed to familiarize the teacher with the wide variety of activities that could be conducted while a class is at the center.

To insure that there is coordination between the resident experience and classroom activities, a staff member and the classroom teacher should jointly plan the lessons leading up to the resident center experience, the week's resident program, and classroom follow-up

activities. If this is done effectively, it will keep the week at the center from becoming a week away from school with little relationship to what is going on in the classroom.

The resident center should have a comprehensive library and knowledgeable staff who would be able to work with schools in the surrounding area. This would provide more access by schools to environmental education consultants than could be provided readily through the Department of Public Instruction in Helena.

A study should be conducted to determine the feasibility of a lease arrangement between the Department of Public Instruction and scouting organizations and churches that operate camps which might be suitable for such an environmental education resident center. The major limitation to such a lease agreement would be that summer environmental education programs could probably not be conducted.

Mobile Resident Programs

A mobile resident program should be established to further students' knowledge about Montana's environment. This could be conducted by using the existing railroad network within Montana. Through the use of sleeping cars, dining cars, one car equipped as a basic science laboratory and library, and a classroom car for inclement weather, the students would be traveling in their school.

A class could take a trip lasting approximately one week

beginning and ending near their hometown. The trip should be designed to provide the students with frequent stops to investigate the many land use practices throughout the state. Long distance traveling could be done at night so students could make maximum use of daylight hours for field work. Even while traveling during daylight hours students could make some general observations concerning vegetation and land use patterns through the windows of the train.

The mobile environmental education resident program would allow some students to visit areas of the state that they might never visit otherwise. It is hoped that the firsthand knowledge obtained through a trip of this nature would make the students more aware of the various sides of environmental issues now under discussion within Montana.

Some advantages of the mobile environmental education resident program when compared to the resident center are:

1. The mobility would allow students to compare diverse environments within a relatively short period of time.

2. It would allow students to study while traveling. (Soil and water samples could be analyzed while the train was moving to a new location.)

3. It would allow each class to pick the places they wanted to go to for environmental studies rather than requiring them to go to one specific location.

4. During any stop students and teachers could visit classes in that area and exchange information and ideas.

Educational Television

If the State of Montana constructs an educational television network, provisions should be made to insure that the following three distinct types of programs are included.

There should be programs for classroom students that provide background information on various environmental problems. Some of these programs should be designed with the elementary student in mind. Other programs, for secondary students could include debates by nationally known speakers on items of special interest to Montana students.

Evening programs should be aired for the general population. Some of these programs could be documentary in format while others could be debates, speeches or light entertainment with an environmental theme. For some programs it is conceivable that a statewide toll free phone line could be used so that the audience could ask the speakers questions.

There should also be special programs that are designed specifically to show the teachers how they can incorporate more environmental education methodology into the teaching curriculum. These programs would allow a few consultants to reach a large number

of teachers with a minimum of travel involved. Again, these programs would be more beneficial if a toll free telephone number was provided so that teachers could interact with the consultant.

Although the three goals that have been discussed in the preceding paragraphs--the development of three resident centers, mobile environmental education programs, and the use of educational television--are not goals that have been determined through any objective method or item analysis, it is felt by this writer that these goals should be debated by others for possible inclusion with the previous goals found elsewhere in this paper.

RECOMMENDATIONS FOR FURTHER STUDY

As more states develop plans for environmental education, an in depth study to determine the common points and unique features within each plan should be conducted. This study should provide detailed information that could be of use by the Office of Education in the Department of Health, Education and Welfare in drawing up guidelines for federally funded environmental education projects.

It would also be useful to conduct a study to determine how effective the state plans for environmental education have been. This would need to include implementation procedures, funding of programs, and priorities of environmental education program components compared to priorities of other educational programs.

It is also important to remember that Horn has stated that we should know when we have arrived at our goals. As the goals of this plan are implemented, a continuous evaluation system must be developed to determine the effectiveness of this plan.

Another method of determining the success of implementation of this plan would be to survey school administrators, students and parents to determine if they think that these goals have been achieved, or if their goals for environmental education have changed. This study should not be conducted for at least three years to give time for implementation to begin to take place, and would probably be more meaningful if the researcher were to begin his work in approximately five years.

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APPENDIX A

PROGRAMS FOR EDUCATION MINOR IN ENVIRONMENTAL EDUCATION

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Proposed Secondary Education Minor in Environmental Education
at Eastern Montana College

Required:

Conservation	Sc 302	4	
Environmental Education Workshop for Teachers	Ed 430	3	
Environmental Studies Seminar	— 492	3	
		10	10

Electives:

A minimum of 9 credits from the Education courses in the list below	9	
A minimum of 6 credits from each of two other areas listed below	12	
	21	21
Total (Minimum)		31

Note: A student desiring to include a course which is not in the listing below must receive prior approval of his Environmental Education Minor Adviser.

Listing of courses from which to select electives:

Education

Ed 330 - Counsellor Training	3
Ed 493 - Instructor Training in Env. Education	3
Ed 290/490 - Environmental Education Internship	8
Ed 294/494 - Environmental Education Clinic	6

Biology

By 105 - Biology and Society	3
By 455 - Ecology	3

Health, Physical Education & Recreation

PE 405 - Camping Education	3
PE 361 - Recreation Leadership	3

Special Education

SG 446 - Recreation for the Handicap ---------- 3

Political Science

PS 332 - Pressure Groups ---------- 3
PS 334 - Public Administration ---------- 3
PS 440 - Env. Policy and Administration ---------- 3

Economics

Ec 201, 202, 203 - Principles of Economics ---------- 3 each

Earth Science

Gg 101 - General Geography ---------- 3
ES 103 - Physical Geology ---------- 3
ES 104 - Rocks & Minerals ---------- 3
ES 203 - Weather & Climate ---------- 3
Gg 301 - Geography & Resources of Montana ---------- 3

Sociology

Sy 321 - Population ---------- 3
Sy 331 - Urban Sociology ---------- 3

Seminars and Workshops

Py 493 - Ecological Psychology ---------- 3
By 493 - Environmental Microbiology ----- 3
Art 492 - Environmental Design--the use of Native craft materials --------- 3
Ch 492 - Environmental Pollution --------- 3
SS 492 - Resources Development --------- 3
LA 492 - Western Environmental Attitudes

UNIVERSITY OF MONTANA
Environmental Education
(Minor Only)
Elementary and Secondary Education

(30 credits)

Forestry or Education 304	Conservation of Human and Natural Resources in Montana	3
Biology 121	Ecosystem Biology	3
Geology 103	Environmental Geology	4
Sociology 315	Human Ecology	3
Environmental Studies 390-1-2	Environmental Problems-Lectures	3
Education 326	Teaching of Environmental Education	3
Education 327	Problems in Environmental Education	3
Electives from Courses listed below		8
History 364	History of Conservation (3 cr.)	
Political Science 367	The Environment & Politics (3 cr.)	
Sociology 304	Populations (4 cr.)	
Economics 111	Introduction to Political Economy (4 cr.)	
Geography 413	Population and Resource Geography (5 cr.)	

APPENDIX B

ENVIRONMENTAL EDUCATION OPINIONAIRE

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ENVIRONMENTAL EDUCATION OPINIONAIRE

Please indicate if you are a:

_____ Teacher:
_____Elementary
_____Secondary
_____Years teaching experience
_____Subject Area

_____ School Administrator
_____ U.S. Government Employee
_____ Member of an Environmental Group
_____ Other (please indicate: _____)

Age:
_____ Under 25
_____ 25 to 35
_____ 35 to 45
_____ 45 to 55
_____ over 55

_____ Male
_____ Female

Unless otherwise indicated in the directions for a specific question, please check only ONE item per question. Feel free to make remarks for any question below the question or on the back of the paper, but be sure to indicate which question your remarks are concerned with.

1. Do you believe that Environmental Education in Montana's public schools should be emphasized in grades:

   _____ 1-4
   _____ 5-8
   _____ 9-12
   _____ All of above

2. Do you believe environmental education in Montana's public schools should be treated as:

   _____ A separate subject
   _____ A portion of <u>all</u> subjects
   _____ A portion of <u>some</u> existing subjects (if so, which subjects _____)
   _____ Other (please explain)_____
   _____

3. Should teachers be expected to discuss local environmental problems:

_____ Yes
_____ No
_____ No opinion

4. While discussing local environmental problems, should teachers speak against those environmental practices that are considered by the teacher to be detrimental to the community:

_____ Yes
_____ No
_____ No opinion

5. List in order of priority how should the teacher present a balance of both sides of an environmental issue:

_____ Calling in outside speakers
_____ Based on the teacher's own reading
_____ There is no need to present both sides
_____ Students defending what the teacher is against
_____ Other (please explain)_____
_____

6. As one portion of an environmental education program, should students be required to circulate petitions concerning local environmental problems or attend public hearings on environmental issues as a class activity:

_____ Yes
_____ No
_____ No opinion

7. As a portion of their science classes, should students be expected to do research such as air or water quality monitoring in their community:

_____ Yes
_____ No
_____ No opinion

8. How should the results of any environmental monitoring activity carried out by students be made public:

_____ Released to the newspaper, radio, or television
_____ Presented at a city or county council meeting
_____ Turned over to the local, or state, pollution control agency
_____ The findings should not be made public
_____ Other (please explain) _____
_____

9. Should in-service programs in environmental education be conducted through:

_____ Department of Public Instruction
_____ The University System
_____ Local people aware of local problems
_____ U. S. Forest Service
_____ Other agencies (please identify) _____
_____
_____ A combination of the above (please indicate which) _____
_____

10. Do you believe there is now an adequate pre-service environmental education program for potential teachers in Montana:

_____ Yes
_____ No
_____ No opinion

11. If you feel there is an adequate pre-service program, please identify the institution and courses that make up the program:

_____
_____

12. Should any or all potential teachers have a course in environmental education:

_____ All potential teachers
_____ Teachers who will teach in selected subjects (please list the subjects) _____
_____
_____ No potential teachers
_____ No opinion

13. Do you believe the Department of Public Instruction should hire an Environmental Education Coordinator:

_____ Yes
_____ No
_____ No opinion

14. If the Department of Public Instruction hires an Environmental Education Coordinator, what should be his three primary duties:

a. _____
b. _____
c. _____

15. Should there be one state adopted environmental education program or several recommended programs for local school districts to pick from:

_____ One program
_____ Several programs
_____ Only locally developed programs
_____ No opinion

16. List in order of priority who should be responsible for developing any approved environmental education curriculum:

_____ Students
_____ Teachers for the appropriate grades
_____ Department of Public Instruction personnel
_____ University instructors from the appropriate areas
_____ Personnel from other state, federal or environmental groups (please indicate the group) _____
_____
_____ Other (please explain) _____
_____

17. Do you believe environmental education can be taught effectively in the typical classroom:

_____ Yes
_____ No
_____ No opinion

18. What type of classroom structure do you feel is most conducive to environmental education programs:

_____ Traditional
_____ Open
_____ Other (please explain) _____
_____

19. What type of teaching structure do you believe is most conducive to carrying out environmental education programs:

_____ One teacher for all subjects (typical elementary classroom)
_____ Team teaching
_____ Departmentalization
_____ Other (please explain) _____
_____

20. Should all new schools be required to set aside land for an outdoor classroom:

_____ Yes
_____ No
_____ No opinion

21. Should the Department of Public Instruction provide a facility where local school districts can conduct resident (overnight) environmental education programs:

_____ Yes
_____ No
_____ No opinion

22. If the Department of Public Instruction provides a resident facility should they also provide the staff at such a facility:

_____ Yes
_____ No
_____ No opinion

23. Should environmental education be a portion of all, or of some, adult education courses:

_____ All
_____ Some (please indicate which courses) _____
_____
_____ No opinion

24. Please list the following topics in order of importance in implementing a statewide environmental education program through the Department of Public Instruction:

_____ Encouraging the University to offer pre-service courses in environmental education
_____ Conducting in-service programs
_____ Having a full-time environmental education coordinator in the Department of Public Instruction
_____ Establishing outdoor laboratories on school sites
_____ Establishing a resident center
_____ Developing curriculum materials
_____ Other (please list and give a priority number)

25. What agency or group do you believe is now doing the most to promote environmental education in the public schools:

_____ Department of Public Instruction
_____ University System
_____ U.S. Forest Service
_____ National Park Service
_____ Garden Clubs
_____ Soil Conservation Service
_____ Other (please identify) _____
_____
_____ Individual school districts (please identify)_____
_____
_____ Montana Fish and Game Department

Please elaborate on the following:

26. Do you feel there is fragmentation in the effort to produce an environmentally literate population, and how can this fragmentation be reduced?

27. Should environmental education attempt to change values and life styles?

28. Other related comments you wish to make relative to environmental education.

APPENDIX C

TIME TABLE OF CONFERENCES AND RELATED ACTIVITIES

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May 17-18, 1973	Environmental Education Conference, Bozeman
May 24, 1973	Sixty-three Opinionaires mailed
June, July, August 1973	Interviews conducted
June 20, 1973	First Ad Hoc Environmental Education Committee meeting, Deer Lodge, Montana
July 25, 1973	Second Ad Hoc Environmental Education Committee meeting, Deer Lodge, Montana
September 15, 1973	Third Ad Hoc Environmental Education Committee meeting, Deer Lodge, Montana
October 18, 1973	Fourth Ad Hoc Environmental Education Committee meeting, Deer Lodge, Montana
December 5, 1973	Fifth Ad Hoc Environmental Education Committee meeting, Deer Lodge, Montana
January 15, 1974	Regional Hearing on the proposed Montana Environmental Education Plan, Billings, Montana
January 16, 1974	Regional Hearing on the proposed Montana Environmental Education Plan, Great Falls, Montana

APPENDIX D

PERSONS AT THE MONTANA ENVIRONMENTAL EDUCATION CONFERENCE

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ENVIRONMENTAL EDUCATION CONFERENCE ROSTER
May 11-12, 1973

Neta Aasheim, Whittier School, Bozeman, Montana 59715

Grover Anderson, Bozeman Senior High School, 1211 West Main St., Bozeman, Montana 59715

Terry Beaver, Helena Senior High School, 1300 Billings Ave., Helena, Montana 59601

Dr. Donald Beurerman, Dept. of Chemistry, Montana Tech., Butte, Montana 59701

Dr. Wilson Clark, Science Division, Eastern Montana College, Billings, Montana 59101

H. Warren Clements, Paxson School, South Higgins & Evans, Missoula, Montana 59801

Tom Ellis (& Carla), Public & Recreation Coordinator, Supervisor's Office, P.O. Box 2556, Billings, Montana 59103

Mr. Edward Eschler, Office of State Superintendent of Public Instruction, Helena, Montana 59601

Robert G. Frank, Star Rt., Ledger, Montana 59456

Jan Geer (Mrs.), Rte. 2, Box 2736, Hamilton, Montana 59840

John Geer, Rte. 2, Box 2736, Hamilton, Montana 59840

Glen Gray, Pine Hills School, Miles City, Montana 59301

Duane Gripentroy, Shelby Public Schools, Shelby, Montana 59474

Margaret Hammond, Bozeman Senior High School, 1211 W. Main St., Bozeman, Montana 59715

Ruth Garrison, Bozeman Senior High School, 1211 W. Main St., Bozeman, Montana 59715

Guy Hanson, Hebgen Lake Ranger District, Box 520, West Yellowstone, Montana 59758

Edward Heiser, Environmental Education, 101 10th Street West, Billings, Montana 59102

Sister Dorothy Henscheid, Butte Central High School, 9 So. Idaho, Butte, Montana 59701

Robert Herrig, Superintendent of Schools, Lincoln Co. Court House, Libby, Montana 59923

Sheila Hight, Belgrade School Dist. #44, P.O. Box 166, Belgrade, Montana 59714

Pat Holmes, Rte. 2, Box 2230, Hamilton, Montana 59840

Dan Holmquist, Park Senior High School, McLeod Island, Livingston, Montana 59047

Dale Huhtanen, School Dist. #23, P.O. Box 7, Harrison, Montana 59735

Michael Jablin, Billings Senior High School, 425 Grand Ave., Billings, Montana 59102

Harold Knapp, Missoula County High School, Missoula, Montana 59801

John Jackson, 1623 So. 11th W., Missoula, Montana

Pat Jennings, Bozeman Senior High School, 1211 West Main St., Bozeman, Montana 59715

Andrew Kardos, National Park Service, Midwest Region, 1709 Jackson St., Omaha, Nebraska 68102

Jack Kober, Lincoln Co. High School, Box 307, Eureka, Montana 59917

Charles Larson, 503 So. Fifth St., Hamilton, Montana 59840

Alan Leftridge, School Dist. #69, West Yellowstone, Montana 59758

Clif McLaughlin, Junior High School, Box 669, Livingston, Montana 59047

R. Alan Mebane, National Park Service, P.O. Box 168, Yellowstone National Park, Wyoming 82190

Robert Mehlhoff, Big Sandy Public Schools, P.O. Box 570, Big Sandy, Montana 59520

Monte Miles, Powell County High School, Deer Lodge, Montana 59722

Francis Mitchell, Falls Creek Project, Condon, Montana 59826

R. G. Montgomery, Bozeman Senior High School, 1211 West Main St., Bozeman, Montana 59715

Bill Morefield, Nashua, Montana

Jim Murphy, 619½ Yellowstone, Billings, Montana 59102

Otto Neuhardt, Custer County High School, 20 S. Center, Miles City, Montana 59301

Gary Olson, Bozeman Senior High School, 1211 West Main St., Bozeman, Montana 59715

Dennis Prewett, School Dist. #1, Red Lodge, Montana

Ronald Robinson, Twin Bridges Public School, Twin Bridges, Montana 59754

Karl Roosa, Junior High School, Box 669, Livingston, Montana 59047

Cal Ryder, 112 Riverview S.E., Great Falls, Montana 59401

Gene Schilling, Shelby Public Schools, Shelby, Montana 59474

Mary Schillinger, Whittier School, Bozeman, Montana 59715

Ray Shackleford, Bozeman Senior High School, 1211 West Main, Bozeman, Montana 59715

Stephan Sherick, 3828 Bellecrest Drive, Missoula, Montana 59801

Robert Shewkle, Park Senior High School, McLeod Island, Livingston, Montana 59047

Pat Sinnema, Bozeman Senior High School, 1211 West Main, Bozeman, Montana 59715

Ron Skelton, Rt. 2, Box 2280, Hamilton, Montana 59840

Gary Swant, Powell County Environmental Education Center, 709 Missouri Ave., Deer Lodge, Montana 59722

Keith Thurlkill, BLM, Billings Dist. Office, P.C. Box 2020, Billings, Montana 59103

Walt Waldum, Park Senior High School, Livingston, Montana 59047

Sophia Weber, Bozeman Senior High School, 1211 West Main, Bozeman, Montana 59715

Tim Welsh, Falls Creek Project, Condon, Montana 59826

Dr. Paul Yambert, Carbondale Campus, Southern Illinois University, Carbondale, Illinois 62901

Vincent Yannone, State of Montana Dept. of Fish & Game, Helena, Montana 5960[illegible]

Wilmer A. Zeller, 221 Indian St., Wolf Point, Montana 59201

John Briggs, 223 Brooks St., Missoula, Montana 59801

Keith Blanding, 511 Missouri, Deer Lodge, Montana 59722

Jim Greene, 445 Edith St., Missoula, Montana 59801

Larry Stranahan, Havre High School, Havre, Montana

Bruce Kron, Havre High School, Havre, Montana

Dorothy Ripley, Rt. 2, Bozeman, Montana 59715

Stan Hill, 1203 Cherry Drive, Bozeman, Montana 59711

Roy C. White, University of Montana, Missoula, Montana 59801

APPENDIX E

PERSONS INTERVIEWED IN CONJUNCTION WITH THE ENVIRONMENTAL EDUCATION PLAN DEVELOPMENT

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Mr. Hayes, Assistant Superintendent, Department of Public Instruction, Helena, Montana

Mr. Edward Eschler, Department of Public Instruction, Helena, Montana

Mr. Gary Hall, Department of Public Instruction, Helena, Montana

Mr. Vince Yannone, Montana Fish and Game Department, Helena, Montana

Mr. Fletcher Newby, Chairman, Environmental Quality Council, Helena, Montana

Mr. Steve Sherrick, Information and Education Officer, Region I, U.S. Forest Service, Missoula, Montana

Mr. Alan Mebane, Chief Naturalist, Yellowstone National Park, Wyoming

Ms. Dorothy Bradley, Member, Montana State Legislature, Helena, Montana

Dr. Will Clark, Science and Mathematics Department Chairman, Eastern Montana State College, Billings, Montana

Mr. Cal Ryder, Environmental Education Director, Great Falls Public Schools, Great Falls, Montana

Mr. Ron Skelton, Environmental Education Director, Hamilton Public Schools, Hamilton, Montana

Mr. Gary Swant, Powell County Environmental Education Program Director, Deer Lodge, Montana

Mr. Fran Mitchell, Falls Creek Environmental Education Director, Condon, Montana

Mr. Joe McElwain, Montana Power Company, Butte, Montana

APPENDIX F

SUMMARIES OF INTERVIEWS CONDUCTED

At the time the interviews were conducted, the goals that are first presented on page 99 of this paper had been tentatively formulated. The interviewer used the tentative goals as a starting point for all discussions. Of necessity, each interview was somewhat different and in each the majority of the time was spent on the topics of most concern and interest to the person being interviewed.

Mr. Hayes (Department of Public Instruction)

Mr. Hayes was in favor of having an environmental education program that becomes an integral portion of all subjects. He is opposed to any attempt that would require a specific course in environmental education for elementary or secondary students. Mr. Hayes also expressed the opinion that until and unless the Department of Public Instruction provides full-time consultants in subject areas such as science and social studies there should be no full-time environmental education supervisor employed by the Department of Public Instruction. He had no disagreement with the other goals, but time did not permit the discussion of the proposal to require outdoor environmental laboratories on all new school sites.

Mr. Eschler and Mr. Hall (Department of Public Instruction; Joint Interview)

Both Mr. Eschler and Mr. Hall agreed that a professional library and dissemination service for environmental education should

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be established through the Department of Public Instruction. However, they were both opposed to a full-time environmental education supervisor unless there is a similar position for all subject areas. They suggested the inclusion of social agencies, such as Social Welfare Department, on the proposed advisory council. This suggestion was based on the belief that environmental education must include the total environment, including the human aspect. They would like to see more undergraduate courses required dealing with environmental education and favor a minor in environmental education at all state teacher education institutions.

Mr. Ya[illegible]e (Fish and Game Department)

Mr. Yannone strongly favors the creation of an advisory committee for environmental education. He feels that there is now a great deal of environmental education material available to the schools, but the lack of coordination from agency to agency causes some unnecessary duplication. In discussing the advisory council makeup, Mr. Yannone favored an approach similar to that used by Ohio with two committees. It should be pointed out that Mr. Yannone was the only person interviewed who favored this committee structure. He also stated that he receives more requests to work with teachers on environmental education activities than he can fill, and feels that the Department of Public Instruction should have a full-time person to do

this. From his work with teachers he has concluded that there should be more undergraduate work required in environmental education methodology, and a minor in environmental education for those who want more expertise in this area.

Mr. Newby (Environmental Quality Council)

Mr. Newby stressed that his office is not an educational office but that his staff does provide information to schools on request. He feels that his department does not have good communications with the Department of Public Instruction and that an Environmental Education Advisory Council could be an asset if it provided this. Other than that, he admitted that he has no specific thoughts on environmental education, nor has he spent much time finding out what it is. He referred me to Ms. Bradley, who is a member of the State Legislature and an Environmental Quality Council member and in meetings has expressed an interest in environmental education.

Mr. Sherick (U.S. Forest Service)

Mr. Sherick sees the definite need for some form of regular communication between the various agencies that are now involved in environmental education. He feels that this could best be accomplished through an advisory council for environmental education. He feels that it would be necessary for the Department of Public Instruction to have a full-time environmental supervisor if the direction of the

council is to be carried out. He also stated that the U.S. Forest Service has developed some material for teacher/student use in environmental education activities. He said that the U.S. Forest Service has conducted several workshops to show teachers how to use this material. He said that these workshops have pointed out to him the need for more undergraduate courses in environmental education methodology at all teacher education institutions in Montana.

Mr. Mebane (National Park Service)

Mr. Mebane has conducted environmental education in-service programs for teachers in the school districts of West Yellowstone, Mammoth and Bozeman. He feels that these may have carried more weight and been slightly more effective with direct cooperation and liaison with the Department of Public Instruction. As such, he would like to see a full-time environmental education supervisor hired by the Department of Public Instruction. In addition, he feels that the environmental education supervisor should have some professional library and clearing house for environmental education material because of the abundant amount of material now available from many existing sources. His experiences with workshops has led him to believe that there should be more environmental education courses required for all undergraduate education majors. He also favors restructuring the existing curriculum rather than adding new courses

in the elementary and secondary schools because of the inter-disciplinary nature of environmental education.

Ms. Bradley (Montana State Legislator)

Ms. Bradley originally intended to introduce a bill into the 1974 legislature that would require a course in environmental education be a part of the required curriculum for all elementary or secondary students. A later meeting with her revealed that this position had changed to the point where she would prefer to see environmental education become a portion of all subjects now taught in elementary and secondary schools.

Mr. Ryder (Great Falls Public Schools)

Mr. Ryder definitely feels that there should be more undergraduate courses required in environmental education methodology for all teachers. He is in favor of a methods course which would require concurrent enrollment in another methodology course which would allow the student to see the tie-in with environmental education and other courses. He also strongly sees the need for a full-time environmental education supervisor in the Department of Public Instruction. He feels that this person would be invaluable in assisting schools to develop new environmental education programs. Mr. Ryder would also like to see outdoor environmental laboratories developed at all new school sites. In addition, he favors a minor in environmental

education and expressed the belief that this would be an asset in obtaining teachers who are more fully qualified to direct environmental education projects for local school districts.

Mr. Skelton (Hamilton Public Schools)

Mr. Skelton feels that there should be an advisory council and a full-time environmental education supervisor. He would like the supervisor to be responsible for disseminating information. This is of special interest to Mr. Skelton since one portion of this project deals with development of curriculum material. He feels that with a central clearing house in Montana for teacher/student material he would have easier access to material that may be of use to him. He also feels that at the present time most teachers are not well qualified for handling environmental lessons and that more undergraduate education in this area would be an asset. He also feels that a minor in environmental education should be offered for those who wish to become more proficient in this area. Mr. Skelton would like to see all new schools be required to have outdoor environmental laboratories. In his project he is working on incorporating environmental education into the total curriculum and as such he favors this approach as opposed to treating environmental education as a separate subject.

Mr. Swant (Deer Lodge Public Schools)

Mr. Swant was in general agreement with all the goals.

However, at first he was opposed to requiring outdoor environmental laboratories at all new schools. On further discussion, and after considering such factors as a possible fuel shortage and the problems some school districts have transporting students to field sites, he agreed that this too would be a good goal to strive for.

Dr. Will Clark (Eastern Montana College)

Dr. Clark stated that he was in agreement with all the goals. He was most interested in the goals dealing with teacher education and expressed the belief that these, and the position of a full-time environmental education supervisor are the key to the rest of the goals. He pointed out that Eastern Montana College is working to offer a minor in environmental education, but does not now have the staff capability to require an environmental education methodology course of all undergraduate students.

Mr. Fran Mitchell (Falls Creek Project Director)

Mr. Mitchell supported the goal of restructuring the curriculum to make environmental education an integral portion of the total curriculum. He sees no way a true understanding of environmental problems can be learned through a separate course in environmental problems. He also favors a full-time environmental education supervisor in the Department of Public Instruction to assist with evaluating existing programs. In an effort to reduce duplication he

would like to see an advisory council formed.

Mr. McElwain (Montana Power Company)

Mr. McElwain stated that the Montana Power Company assisted the garden clubs in Montana with the purchase of a curriculum guide for environmental education that followed an interdisciplinary approach. He also stated that his company is considering working with a consortium of northwest power companies to produce some environmental education materials for school use.

APPENDIX G

TYPICAL RESIDENT PROGRAM FOR SIXTH GRADERS IN BILLINGS

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Session #2

Travel to Camp

On Monday, May 7, children are to have breakfast at home and be at their own school by 8:00 a.m., with all their equipment. Teachers and counselors will ride the buses with the children. Each item (sleeping bag, suitcase, etc.) is to bear a tag with the child's name, school, dorm, and session number. These items will be hauled on the bus with the children.

Buses arrive at camp about 11:00 a.m. Unload at designated area. Orientation. Get settled.

12:00 Noon	Cleanup for lunch	
12:15 - 1:15	Lunch, dishes, free time	*Off: Moe, Gruber Anderson Snyder
1:15 - 3:15	Instructional Groups	

Field Instructional Groups	Teachers	Back-up Instructors*
Group A - Wildlife studies	Dempsey	Bunn, Cook
Group B - Geologic studies	Jarvis	Armstrong
Group C - Ecologic studies	Christensen	Heald, Fuller, Brattin
Group D - Plot studies	Anderson	Banka, Smith
Group E - Wildlife studies	Kirkness	Evans, Schlepp
Group F - Geologic studies	Krimmer	Hicks
Group G - Ecologic studies	Ullman	Nelson, Racki, Madison
Group H - Plot studies	Thomas	Whalen, Prater

*Denotes teacher not wanting first session taught by back-up instructor.
**Denotes entire session to be taught by back-up instructors.

3:15 - 3:30	Break
3:30 - 6:00	Choice of art (Mrs. Tyson), trailing, first aid, compass games, fire building, and archery (Camping Education Class - EMC).
6:00	Supper and cleanup Then free time until campfire
7:30 - 9:15	Campfire program (Recreational Leadership Class - EMC)

9:15 - 9:30	Ready for bed
9:30	Lights out

Tuesday, May 8

6:30	Early morning activities (Camping Education Class - EMC)
7:00	Roll out of bed
7:30	Breakfast
8:00 - 8:30	Dishes, camp and sleeping quarters cleanup
8:30 - 8:45	Inspirational program (Recreational Leadership Class - EMC)
8:45 - 10:45	Instructional Groups

Field Instructional Groups	Teachers	Back-up Instructors
Group B - Wildlife studies	Dempsey	Bunn, Cook
Group C - Geologic studies	Jarvis	Armstrong
Group D - Ecologic studies	Christensen	Heald, Fuller, Brattin
Group A - Plot studies	Anderson	Banka, Smith
Group F - Wildlife studies	Kirkness	Evans, Schlepp
Group G - Geologic studies	Krimmer	Hicks
Group H - Ecologic studies	Ullman	Nelson, Racki, Madison
Group E - Plot studies	Thomas	Whalen, Prater

10:45 - 11:30	Free time - Cleanup for lunch
11:30 - 12:30	Lunch, dishes, free time
12:30 - 2:30	Instructional Groups

Field Instructional Groups	Teachers	Back-up Instructors
Group C - Wildlife studies	Dempsey	Bunn, Cook
Group C - Geologic studies	Jarvis	Armstrong
Group A - Ecologic studies	Christensen	Heald, Fuller, Brattin
Group B - Plot studies	Anderson	Banka, Smith
Group G - Wildlife studies	Kirkness	Evans, Schlepp
Group H - Geologic studies	Krimmer	Hicks
Group E - Ecologic studies	Ullman	Nelson, Racki, Madison
Group F - Plot studies	Thomas	Whalen, Prater

2:30 - 3:00	Break
3:00 - 6:00	Choice of art (Mrs. Tyson), trailing, first aid, compass games, fire building, and archery (Camping Education Class - EMC)
6:00	Supper and cleanup Then free time until campfire
7:30 - 9:15	Campfire program (Recreational Leadership Class - EMC)
9:15 - 9:30	Ready for bed
9:30	Lights out

Wednesday, May 9

6:30	Early morning activities (Camping Education Class - EMC)
7:00	All roll out of bed
7:30	Breakfast
8:00 - 8:30	Dishes, camp and sleeping quarters cleanup
8:30 - 8:45	Inspirational program (Recreational Leadership Class - EMC)
8:45 - 10:45	Instructional Group

Field Instructional Groups	Teachers	Back-up Instructors
Group D - Wildlife studies	Dempsey	Bunn, Cook
Group A - Geologic studies	Jarvis	Armstrong
Group B - Ecologic studies	Christensen	Heald, Fuller, Brattin
Group C - Plot studies	Anderson	Banka, Smith
Group H - Wildlife studies	Kirkness	Evans, Schlepp
Group E - Geologic studies	Krimmer	Hicks
Group F - Ecologic studies	Ullman	Nelson, Racki, Madison
Group G - Plot studies	Thomas	Whalen, Prater

10:45	Pack up Go to sleeping quarters. Pack completely. Make sure all luggage is tagged. Thoroughly clean dorms and area for next group.

11:00	Take all luggage to designated areas and place it behind the sign with the name of your school on it.
11:15 - 11:45	Light lunch - dishes
11:45	Load luggage on buses. Board buses and depart for Billings

About 3:15 p.m. buses arrive at children's own schools.

APPENDIX H

CORRESPONDENCE WITH DEPARTMENT OF PUBLIC INSTRUCTION

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STATE OF MONTANA

SUPERINTENDENT OF PUBLIC INSTRUCTION

HELENA 59601

DOLORES COLBURG

January 10, 1973

Mr. John Y. Jackson
1623 South 11th West
Missoula, Montana 59801

Dear Mr. Jackson:

Thank you for your letter of January 4, 1973 in which you inquire about the possibilities of writing a State Plan for Environmental Education for Montana under the auspices of my office.

I am pleased to learn of your interest in writing such an environmental education plan. However, as you perhaps know, the writing of a state plan of this nature is a long process and would involve many people who would have to establish specific goals and objectives prior to embarking on such a project. In addition, the potential for receiving substantial or even minor monetary assistance at this point is doubtful since my budget request for incorporating a service area in environmental science was deleted from the Governor's budget request.

I am, however, most anxious to develop a realistic environmental education plan for Montana; therefore, I have asked Dr. L. E. Scarr, Assistant Superintendent in my office, to get in touch with you to further explore the possibilities of such a plan.

If I can be of further assistance, Mr. Jackson, please let me know.

Sincerely,

Dolores Colburg

DOLORES COLBURG
State Superintendent

DC:el

cc: L. E. Scarr

1623 S. 11th West
Missoula, Montana 59801
January 4, 1973

Mrs. Dolores Colburg, Superintendent
Department of Public Instruction
Helena, Montana 59601

Dear Mrs. Colburg:

I am currently a doctoral student in education at the University of Montana. Upon the recommendation of Dr. Roy C. White, my advisor, I am writing you concerning a state plan for Environmental Education in Montana.

Prior to coming to Montana I was employed by the South Carolina State Department of Education as their Environmental Education Consultant. I am aware that the Office of Education would like each state to have a comprehensive plan for Environmental Education and that this plan is almost required by O.E. to assist them in determining what programs will be funded under the Environmental Education Act, PL 91-516.

If no one in your office is currently working on such a plan I would like to propose doing one for my doctoral dissertation. I realize that such a plan would need the input of various people around the state now working in Environmental Education such as Dr. White, Dr. Will Clark, Gary Swant and Ron Skelton, in addition to personnel from your office who are involved in long term planning. I do feel that such a dissertation would be of value to your office.

I would hope that if you feel that this is a worthwhile project for me to undertake on behalf of your department that it would be possible for me to receive some amount of financial assistance to help me with travel, postage, typing, and other expenses that I am likely to encounter, as well as a small consultant fee to help me pay tuition.

I do hope to hear from you in the near future and would be happy to come to Helena to discuss this further with you.

Sincerely,

John K. Jackson

APPENDIX I

AD HOC ENVIRONMENTAL EDUCATION COMMITTEE

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AD HOC ENVIRONMENTAL EDUCATION COMMITTEE ROSTER

Carl R. Anderson, 40 E. Broadway, Butte, Montana 59701

D. R. Beuerman, Montana Tech., Butte, Montana 59701

Sheila Hight (Mrs.), 1208 So. 15th, Bozeman, Montana 59715

Pat Holmes (Mrs.), R. 2, Box 2230, Hamilton, Montana 59804

John Jackson, 1623 So. 11th West, Missoula, Montana 59801

Charles Larson, 503 So. Fifth St., Hamilton, Montana 59840

R. Alan Mebane, P.O. Box 168, Yellowstone National Park, Wyoming 82190

Ron Robinson, Twin Bridges, Montana 59754

Steve Sherick, Forest Service Regular Office, Missoula, Montana 59801

Ron Skelton, Rt. 2, Box 2280, Hamilton, Montana 59840

Gary Swant, 709 Missouri Ave., Deer Lodge, Montana 59722

Roy C. White, Box 68, Victor, Montana 59875